



AT ALBUQUERQUE, Gen. Withers presented Weapons Recognition of Excellence Awards to Bill Stevens (7230), Bob Luna (6321), Paul Longmire (5126), Steve Burchett (1521), and Gordon Boettcher (DMTS, 2565). "Too often, classi-

fication problems preclude recognition for people in the weapon program," noted President Dacey. "So recognition of excellence by our sponsors in Washington is much appreciated by all of Sandia."

At Albuquerque & Livermore

Seven Win Awards for Excellence

Seven Sandians received Weapons Recognition of Excellence Awards from Maj. Gen. Ken Withers, Jr., Director of Military Applications, DOE, last week.

During a ceremony at the Technology Transfer Center in Albuquerque on Thursday, Withers said that, on this 40th anniversary of the first, "and, I hope, last" use of nuclear weapons, it's "important to remember the essential, fundamental deterrence provided by the nation's nuclear arsenal." He also noted that he appreciated the opportunity to meet the people actually doing the work necessary to ensure national security.

Withers then presented awards to Gordon Boettcher (DMTS, 2565), Steven Burchett (1521), Paul Longmire (5126), Robert Luna (6321), and William Stevens (7230). Earlier in the week, Withers had presented awards to Morris Mote, Jr., (DMTS, 8316) and Cook Story (8431) in Livermore.

Gordon Boettcher's award came for his 25 years of work in the design, development, and test evaluation of sprytrons (vacuum switch tubes half the size of a thumbnail) and overvoltage gaps for nuclear weapons. Sprytrons provide fast and precise switching of large currents, in exploding bridge-wire and slapper detonator firing systems and in low-voltage timer circuits, for example. Sprytrons must be reliable: they are required to work from several hundred to thousands of times before failure.

Gordon has been awarded two patents, one for the basic sprytron design and one for a precise-breakdown overvoltage gap. More than 20 different configurations of sprytrons are now manufactured for the DOE by an EG&G facility in Salem, Mass. Since 1962, the facility has delivered to the Nuclear Weapon Complex more than 100,000 sprytrons and gaps with virtually no



AT LIVERMORE, Gen. Withers presented Weapons Recognition of Excellence Awards to Cook Story (8431) and Morris Mote, Jr. (DMTS, 8316) for their work in developing an inertia weld technique adaptable to weapon fabrication. "This is a fine example of close cooperation between different departments at Sandia in refining a weapon design to reduce costs at the production plants," said Dick Claassen (8000).



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defects. That success is due in large part to Gordon's efforts.

Steve Burchett pioneered in applying nonlinear, finite element computer programs (both two- and three-dimensional) to the complex geometries and multimaterial constructions typical of weapon components. He's Sandia's principal investigator of weapon component breakage caused by severe environment and/or manufacturing stresses. Over the years, he has been called upon 35 times to perform intensive analyses of the breakdown modes of various components from most of the major weapon systems.

Steve's analysis of the MC3753 actuator, based on his concept of limited structural

integrity and his novel application of analysis tools to explain the behavior of a component with multiple internal fractures, led to a sixfold increase in the device's design peak pressure and the elimination of reliability and safety problems.

Steve has also contributed to improved weapon component design by developing design manuals and courses on structural analysis. And he's the principal author of the definitive design manual on glass-to-metal seals.

Paul Longmire has supervised W80 Development Division 5126 since the weapon entered Phase 3 in 1976. Development of the W80 warheads (both the sea-
(Continued on Page Three)

Antojitos

In Defense of Watching TV In his last "Antojitos" column my boss noted--tongue in cheek (I think)--that no one who admits to watching TV ever gets promoted. I'm not a supervisor at Sandia; I'm a summer hire. But I am a supervisor at my usual place of employment, and I do watch TV. I just don't consider it a hobby. Hobbies comprise those things we do in our spare time. Many of us don't watch TV in our spare time. And, of course, we don't watch it at work. But there's a time between work and spare, and that's where watching TV fits.

A television set is an appliance disguised as a piece of furniture. No one would consider operating a dishwasher, food processor, washing machine, or dryer as a hobby. Except for Thursday nights, of course, TV is just there. I live alone. The TV keeps me company while I cook and eat dinner. But I also read books--good ones sometimes--while I "watch" TV. Years ago, I could read a book, watch TV, and play a board game with my son--and often I'd win. (I can't do that anymore. My son is older and smarter.)

I'm old enough to remember when not everyone had a TV set, so I don't take TV for granted because I'm part of the TV generation. I take it for granted because--well, it's just there.

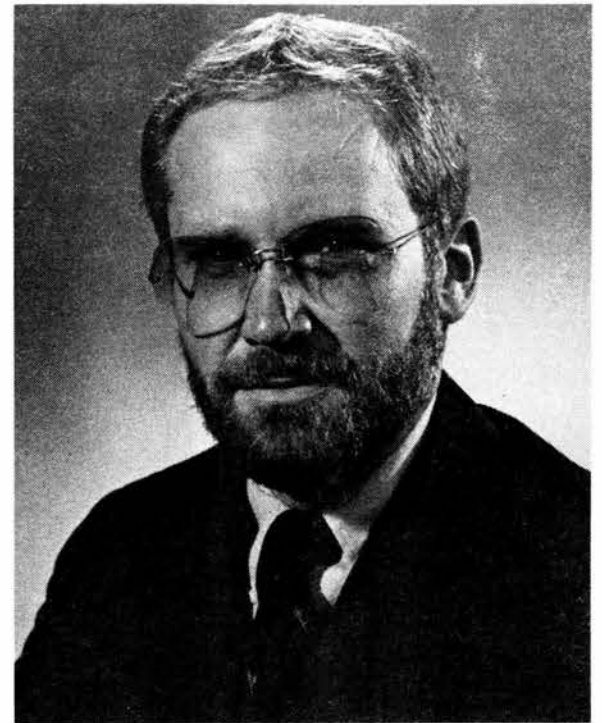
* * *

In Praise of Sandia Last summer, when Bruce asked me if I'd like to write about my impressions of the Labs, I declined because I really hadn't formed many concrete impressions. Since I'm uncleared, I don't get around much--although proofreading every LAB NEWS does give me some idea of what the rest of the world can know about what goes on here. This summer, while working on the special Sandia Education issue--as well as several other stories--I was able to meet and talk with many more Sandians than last year. Also, the Education and Training department hosted weekly meetings for us summer high school teachers at which Sandians from a variety of departments told us about their work. As a result, I have a broader perspective about Sandia and Sandians than I had last summer.

I'll try not to gush, but you Sandians are a special group of people. You people with whom I've worked, and you whom I've met, interviewed, begged for help, even spoken to casually over the telephone are professionals, and you've treated me like a professional. Thank you for your unfailing patience with my ignorance. Even those of you who drive on and off the Base with me each day--thanks for your courtesy. I'm sure there must be a rotten apple around here somewhere; I just haven't run across him or her.

I'll take a great deal back to school with me this fall. I hope I've sharpened my writing skills and can pass that on to my students. Something else very important I'll carry back to school is credibility. All of us high school teachers will take that with us. We can prove to our students that we can do something besides teach and that we know about some nearly boundless opportunities "out there" for them. Thanks.

●Sharon Ball



HERB PITTS (3500)

Herb Pitts Named Personnel Director

Herb Pitts has been named Director of Personnel 3500, effective Aug. 16. He succeeds Bob Garcia, who retired July 31.

Herb joined the Labs in August 1961 as a personnel representative. He held numerous assignments in personnel and in 1966 was promoted to supervisor of Hourly Job Evaluation Division. He subsequently headed Affirmative Action, Personnel Data Systems, and Recruiting Divisions. In December 1977, he became Assistant to Vice President 4000 and, since August 1979, has been manager of Personnel Department 3530.

Herb received his BBA degree from the University of Oklahoma and his MBA from UNM. He has served as a board member of several United Way agencies and is chairman of the Labs' 1985 ECP Committee. He's a past member of the city Personnel Board and a member of the Rocky Mountain College Placement Association. He enjoys tennis and running. Herb and his wife Carol have one son. They live in the NE heights.

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THE AIR FORCE COMMENDATION MEDAL was awarded recently to Capt. Mark Ackermann (Air Force Weapons Laboratory assigned to Division 2155). He is a member of the Air Force Laboratory Associates program managed at Sandia by Art Clark (7210). The award cited the successful results of an in-house research program at AFWL in radiation effects on electronics in weapons, missiles, and satellites. From left are Jim Gover, supervisor of Radiation Effects in Microelectronics Division 2155; Clark, manager of Military Liaison Department; Capt. Ackermann; and Jerry Hood, manager of Semiconductor Devices and Technology Department 2150.

Seven Win Awards for Excellence

launched cruise missile and the air-launched cruise missile versions) involved a variety of design changes required by other parts of the weapon system. For example, extensive redesign was necessary to incorporate neutron generators and to include two functions — PAL (permissive action link) and CD (command disable) — that contribute greatly to the security of the weapons.

Paul and members of the division accommodated those changes during development of the warhead electrical system without significantly increasing production costs.

"The accomplishments of the W80 program are the result of a team effort," says Paul. "The award is a significant honor, which I greatly appreciate, but it's one that I share with many others in the program."

* * *

For nearly 20 years, Bob Luna, "the conscience for plutonium safety," has studied the aerosols that might be produced by plutonium during a nuclear accident, focusing on the safety issues associated with such aerosolization. From thousands of bits of data from Project Roller Coaster (1963) and an understanding of the phenomenology of the non-nuclear detonation of a weapon, Bob developed the computer models DIFOUT and QUAD. These dispersal codes are the principal predictive tools for evaluating a multitude of "what if?" scenarios that grow out of weapon manufacturing, transportation, and storage safety studies.

Bob also led the effort toward a better understanding of the basic phenomenology governing the generation of plutonium aerosols produced in a weapon detonation.

Bob and the members of his division have succeeded in convincing the DOE and the DoD that plutonium limits for weapon storage sites must be based on specific site characteristics (such as meteorology, population, and land use) rather than be set at an arbitrary limit for all sites.

"This award reflects the efforts of many other people over the years," says Bob. "I'm especially indebted to my late boss, Jim Shreve, who presented the aerosolization problem to me originally; and to Hugh Church [6324], John Taylor [311], Norm Grandjean, and Bob Sandoval [both 6321]."

* * *

Bill Stevens contributed to the development of both the hardware and the policies involved in nuclear safety and use control. He was instrumental in promoting the principle of joint DOE-DoD responsibility for nuclear safety and has served as technical advisor on several nuclear weapon system safety studies.

Bill has managed Nuclear Safety Department 7230 since its inception in 1968. With Bill's technical guidance, the group developed both concept and hardware for enhanced nuclear safety measures such as the "weak link/strong link" and the wireless fireset.

* * *

Morris Mote and Cook Story succeeded in adapting an inertia weld technique (a type of friction welding in which one

material is spun to prescribed speed, then forced against the second part; the resulting friction bonds the materials) that resulted in substantial cost and time savings in the B83 program. The weld, for the mid-case of the weapon, is as strong and as tough as base metals and allows low alloy steel to be substituted for a much more expensive alloy steel; the substitution is expected to save some \$10 million in B83 fabrication costs.

Morris played a key role in developing the capability to adapt inertia weld technology to large (500 mm diameter) geometries. Both Morris and Cook led the testing effort required to ensure that the parts manufactured by the new process would

Medical Corner

In Form and Informed

Q: I am 50 years old and quite slender, so on me a "pot belly" really shows. Is there a five- to ten-minute daily exercise that could correct this problem?

A: Your problem is likely not a weight problem but one of muscle tone, specifically abdominal muscle tone. Strong abdominal muscles are important, not only for aesthetics, but to improve posture and prevent lower back problems. Here are a few of the many recommended abdominal exercises:

1. Lie on your back with your knees bent and your feet flat on the floor. Tighten your abdominal muscles and press the small of your back to the floor. Hold for several seconds. Repeat several times.

2. In the same starting position as above, cross your arms over your chest. Keeping your back straight and your head up, slowly (count 7 to 10) raise your upper body to your knees, then slowly lower your back to the floor. Repeat several times.

3. Lie on your back, hands behind your head. With bent knees, raise your heels 12 to 18 inches directly above your hips and cross your ankles. Touch your right elbow to your left knee, then your left elbow to your right knee, lowering your head to the floor in between. Repeat several times.

Please note that in all of these exercises, the knees are bent. *Never* do abdominal exercises with your knees straight (such as straight knee situps or double leg lifts). Do-

Sympathy

To Frank Soto (7481) on the death of his father in Silver City, Aug. 4.

To Gene Daniels (2853) on the death of his father in Missouri, Aug. 4.

To Jim (6450) and Chris Bryson on the death of their infant daughter, July 21.

To Ann Riley (7262) on the recent death of her son in Albuquerque.

To Mike Tammaro (7818) on the death of his sister in Florida, Aug. 20.

To Pete Rand (1813) on the death of his wife in Albuquerque, Aug. 5.

To Edward Thuman (2822) on the death of his wife in Albuquerque, Aug. 15.

meet the stringent requirements demanded by the B83 system.

* * *

"All of us at Sandia are, of course, very glad that the Office of Military Applications is recognizing the excellence of the work we do," said President Dacey. "We're also pleased that OMA is providing special recognition to the actual contributors and their peers. We are proud of these people and of their excellent contributions to the nation's weapon program. But external evidence of the kind we've seen at the ceremonies marking the awards, evidence that demonstrates the appreciation of our colleagues in Washington, is of special value. We thank Ken Withers for his role in honoring our seven Sandians."

ing so can lead to lower back problems, and these exercises do not really use the abdominal muscles.

Additional (and more rigorous) exercises can be obtained from Susan Harris in Medical. Also, a general exercise program that tones muscles throughout the body, such as walking, jogging, or swimming, will help tighten the abdominal muscles.

Laurel Traeger-Mackinnon
Exercise Physiologist

[Send questions for this column to Susan Harris, 3330]

* * *

Wanted: More Non-Exercisers by Susan Harris (3330)

Medical's summer pilot fitness program has been very successful, and we are planning another pilot group this fall. This time, instead of restricting the program to only those participants at low risk for cardiovascular disease, we will set fewer restrictions. The main criterion is that you are not now getting regular, aerobic exercise.

The program will consist of exercise and flexibility testing and body fat estimation before and after the three months of classes. You will be given all test results. You will have a choice between aerobics and walk/jog classes. Aerobics will meet Mondays, Wednesdays, and Fridays from 6:30 to 7:30 a.m. (yes, that's in the morning) at the Coronado Club, or from 4:45 to 5:45 p.m. at the Cafeteria, depending on the preference of the participants. Men are welcome in the aerobics class. Walking/jogging will meet Tuesdays and Thursdays from 11:30 a.m. to 12:30 p.m. at the KAFB track.

Shower facilities are available at the Coronado Club and the Base Gym. Supervisor approval is required for the noon class because it will take longer than the 30-minute lunch period. Classes will run for 12 weeks, from Sept. 30 to Dec. 20.

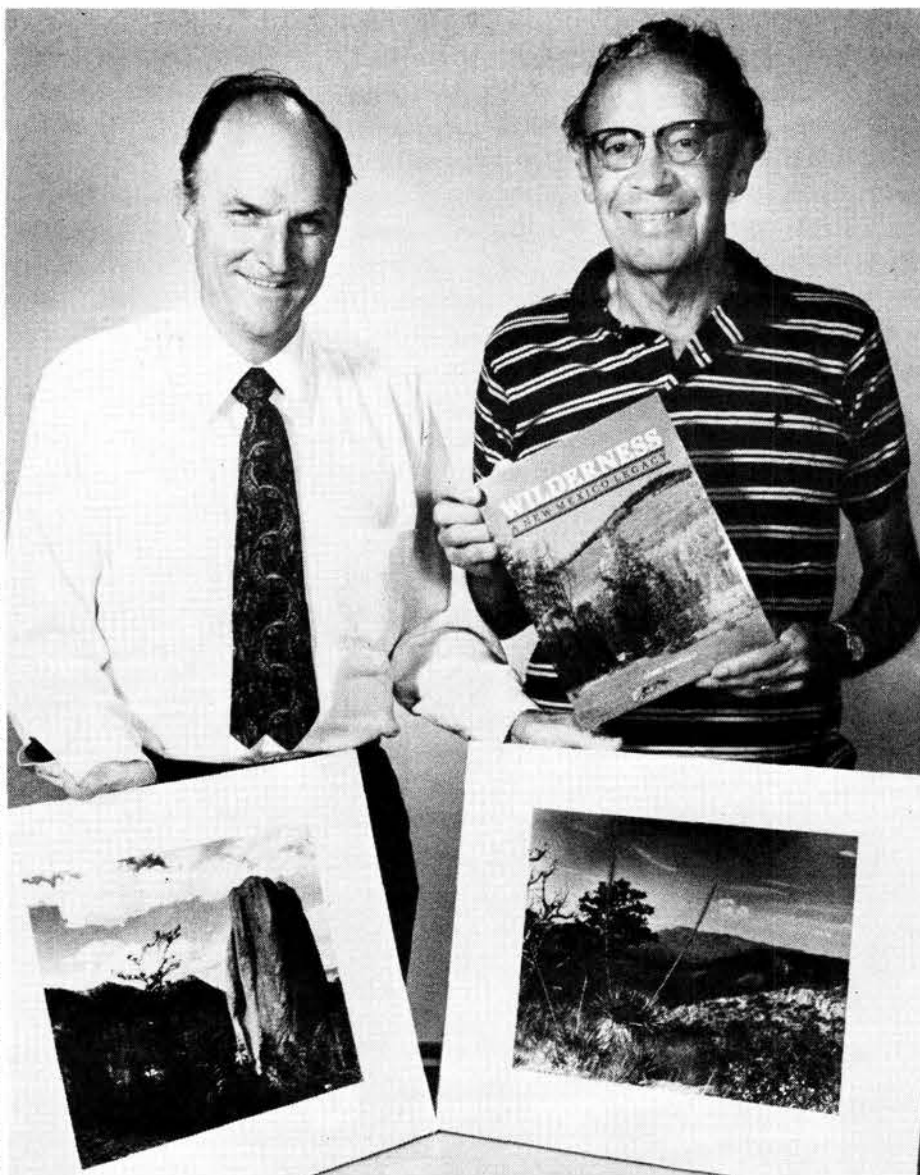
If you're interested in participating, walk, jog, or dance your way to Medical and fill out an application today.

If you have questions about the program, please call me on 4-0713.



A LOT OF YOT'S — Youth Opportunity Trainees (YOTs) marked the end of their summer work experience with a luncheon recently at the Coronado Club and a group portrait afterward. Each year students are selected for this summer program based on their economic need, scholastic performance, school attendance, and teacher recommendations. Depending on their background and interests, participants work in clerical, computing, engineering, and electronic areas. This year 85 NM high school and post high school students participated. Soila Brewer (3533) coordinates the program.

A NEW BOOK, *Wilderness: A New Mexico Legacy*, written by Corry McDonald (right) is just off the press. Corry retired in 1980 after more than 30 years at the Labs. Charlie Karnes (400) did the book's photography. The book is Corry's personal account of 13 of the state's newer (since 1974) national and de facto wilderness areas: Sandia Mountain, Manzano Mountain, Bandelier, Aldo Leopold, Banco Breaks, Wheeler Peak, Latir Peak, Apache Kid, Mount Withington, Sierra Ladrones, Guadalupe Escarpment, Capitan Mountain, and Polvadera Peak. And Corry knows these areas: since 1947, he has explored them and has often played a key role in groups devoted to the political processes necessary to preserving the areas for future generations. A chapter on each one describes its unique physical characteristics, sketches its history and folklore, and provides a guide to backpacking its trails. Charlie's black/white photos and cover color shot give the reader some idea of the unique attractions to be found in each of the areas; he used a 4x5 field-view camera and Tri-X film for the b/w, Ektachrome Professional film for the color. The book is available from the publisher, Sunstone Press (P.O. Box 2321, Santa Fe 87504); it sells for \$15.95 plus tax. LAB NEWS (Bldg. 814) has an examination copy.



Here are some current volunteer opportunities for employees, retirees, and family members. If you would like more information, call Karen Shane (4-3268).

NEW MEXICO ACADEMY OF SCIENCE needs docents to help on weekends at its new "Explore" gallery at the Museum of Albuquerque in Old Town. The idea behind the gallery is to give people, particularly children, a chance to learn scientific principles while enjoying themselves. The Academy hopes that the project, spearheaded by Sandians, will spark enough interest to start an entire museum devoted to "hands-on" science displays.

VORTEX THEATRE needs help in setting up a bookkeeping system. The Theatre's annual budget is modest; no payroll is involved.

ALBUQUERQUE SPECIAL PRESCHOOL offers classes in which handicapped children are integrated with non-handicapped preschoolers. Volunteers are needed to complete a survey that ASP has developed to measure attitude changes once an agency like ASP is introduced into a community. The survey takes about 15 minutes to complete. A second, verification, survey will be taken by the original participants a couple of months later. Anonymity of those completing the survey will be maintained.

Memory Module Points Way To Future IC Design Method

A new IC (integrated circuit) component that is the forerunner of the future was recently produced in Sandia's Microelectronics Organization 2100. The component, part of a TM unit for the JTA (see box) program, is a good piece of work. But what makes it remarkable is the way it was designed and produced.

First, the component itself:

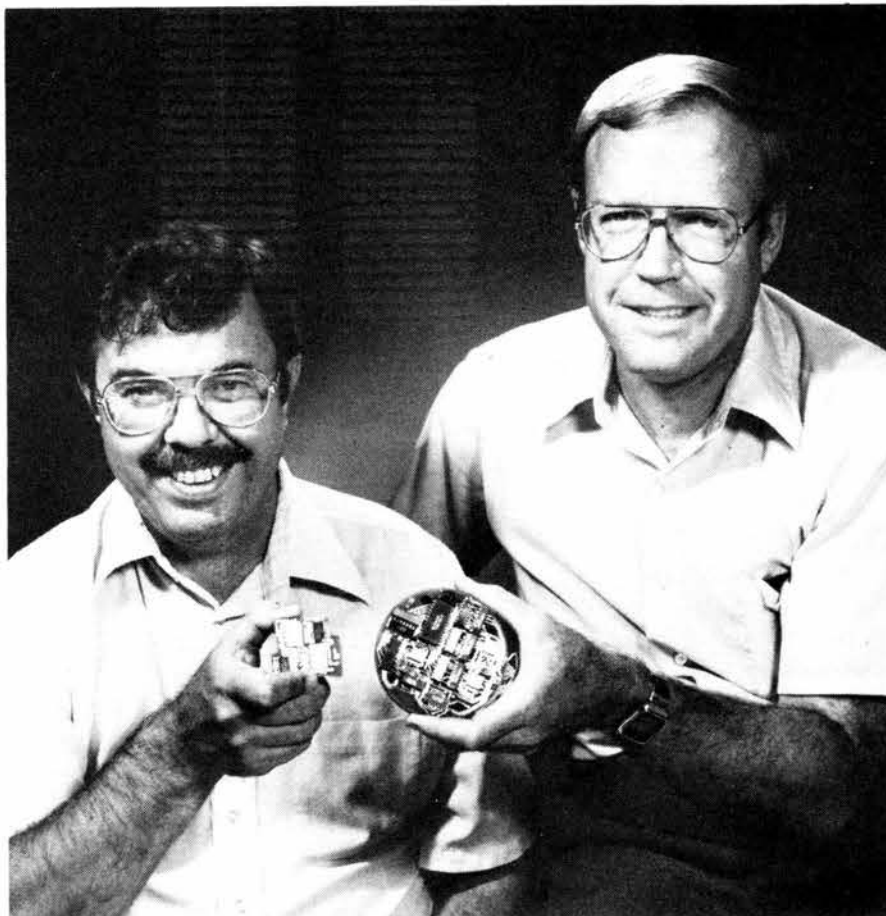
The IC uses a "master slice" gate array (sliced from a standard wafer and a master in that it has 6000 transistors, pre-processed and ready for interconnection) created by the Sandia's Center for Radiation-hardened Microelectronics (CRM). The gate array is fabricated in a radiation-hard CMOS process that has been developed over the past 10 years in the CRM. The master slice is a standard "blank" (75 percent pre-processed and "on the shelf") awaiting the design of the overlaying interconnections and contacts that turn it into a working component with logic cells, switches, memories, and computing functions. All of these functions are squeezed into an area about 1/4-inch square.

Fred Broell (now 2115) and Bill Hale in Dave Bray's JTA Telemetry Division I 5145 had the assignment of designing an asynchronous memory module for the Joint Test Assembly TM unit slated for the Navy's SM-2 surface-to-surface missile.

The memory module is asynchronous in that it collects data at one rate, stores some 4000 words that contain the trajectory data of the missile, and then feeds all the data to the transmitter portion of the TM unit at a different rate. Normally, to design and fabricate such a component would require a year or more. But, using a new Daisy computerized workstation and software prepared by Integrated Circuit Design Department 2110, Fred and Bill were able to produce the IC version of the memory module in three months. The blank gate array was the basic building block for the IC component.

Fred and Bill, in the beginning of their design task, planned to use standard commercial IC cells to perform the functions of the asynchronous memory module. They designed a "breadboard" unit, tested it, modified the design, and had a prototype unit fabricated. It worked well, but it was only a temporary solution. The prototype was much larger than the space that eventually became available as the complete TM package design progressed. The JTA and its TM unit must fit precisely into the space normally occupied by the nuclear portion of the weapon warhead. The final solution was to design a single IC to perform all of the functions of the prototype module.

Normally, confronted with such a dilemma, a Sandia project group could call for help from the IC designers in Department 2110. Using mainframe computers, the IC designers would produce an IC design, test it with computer codes, modify it, then transfer the design to other computers that produce the many masks and overlays necessary for fabrication of the IC in the facilities of the CRM. The job could take up to a year. Fabrication of a custom IC is a complex, painstaking task, requiring up to



FRED BROELL (2115), left, displays asynchronous memory module, part of the TM unit of a JTA package for the Navy's surface-to-surface SM-2 missile. A single IC about 1/4-inch square is the heart of the module. Bill Hale (5145) holds an earlier configuration of the component. The new, smaller module was designed at a workstation, using a preprocessed Sandia blank gate array as a starting point, with software developed to make the much faster IC design effort possible.

200 separate processes and steps from design to finished chip.

Now for the remarkable part:

"Our goal in creating the 'master slice' gate array was to reduce this turnaround time," says B.D. Shafer, supervisor of Semicustom IC Division 2114. "And, at Sandia, most of our custom IC designs have radiation hardness requirements. This virtually eliminates from consideration all commercially available designs."

CAD (computer-aided design) techniques developed by the IC industry over the past decade have revolutionized the way the chips are designed and produced. (The revolution has changed the way people live — from digital watches to the latest VCR rage.) Department 2110 pioneered the CAD effort and has kept abreast of developments, adapting advances to special Sandia needs. The Sandia blank gate array (called G1500) is a logical step in IC technology. The gate array master slice and gate array library were developed by Bill Mills and Eric Melancon (both 2114). Layout design was done by Jeanne Green (2115).

"Fred Broell was the first designer to use our gate array library and master slice," B.D. says. "The gate array is compatible with the Daisy workstation. It includes schematic capture, logic simulation, circuit simulation, layout, and delay path extraction. These tools enable the systems designer to sit at a workstation and design a component completely — from initial block diagram to offloading to our Applicon graphics system for pattern generation of masks."

The masks are overlaid sequentially onto a G1500 blank, and the CRM completes processing of the chip. With the "off the shelf" preprocessed G1500 available, turnaround time is less than three months. Considerable savings in development costs are also achieved along the way. The G1500 is a proved and tested design meeting all current requirements for radiation hardness.

"There are 14 Daisy workstations

JTA Weapon Tests Almost Real

JTA (Joint Test Assembly, for the joint DOE/DoD flight test program) is an activity within the Nuclear Weapons Complex and DoD agencies in which a weapon is pulled from stockpile, placed in the hands of an operational military unit, and then fired in a test exercise. For the exercise, the nuclear portion of the weapon is removed by Sandians at Pantex, and a JTA unit is substituted. (In some cases, the QA stockpile plan calls for building the JTA weapon during regular production.) The JTA package simulates all of the electrical functions of the warhead. The TM (telemetry) unit of the JTA package collects the performance data from the weapon system and transmits them to remote receivers and recorders. The data are analyzed to determine the performance of the weapon.

currently installed at the Labs," B.D. says. "System designers using these stations can complete a gate array design with very little help from the IC group. But, if needed, this help is available at any step in the design cycle. As our training programs expand and additional workstations are installed, much of the IC design work of the future can be accomplished within the project groups.

"It should be noted," B.D. continues, "that design of the IC constitutes only part of the effort. Without the IC fabrication process developed by Department 2140, the actual fabrication by the people in the Bendix Albuquerque Operation, and the development of test programs by Division 2124, the completion of these gate arrays could not be accomplished."

Dark Light Solves Surveillance Problem

Kill those lights but still see the perimeter — that was the challenge. And to Sandia's Systems Engineering Division 5238 fell the charge: devise an economical, practical way to see in the dark.

Sandia has worked with the Air Force since the mid-70s to provide surveillance systems of lights and closed circuit television (CCTV) cameras that illuminate and scan the grounds of sensitive installations around the world.

"But sodium-vapor lamps light secured areas so brightly that they are visible for miles from the ground and even farther from the air," says Rick Beckmann, supervisor of Division 5238. "Sure, intruders in an area will be spotted. But all that light understandably annoys neighbors and advertises the sensitivity of the materials being safeguarded. It was time to find a new concept."

So Greg Donohoe (now 1623) began by looking in the most obvious place. He evaluated existing infrared, thermal imaging systems.

"Infrared cameras are passive systems," says Greg. "They produce images from infrared radiation — heat waves, you might say — emitted by the subjects they view. We can't see heat waves, but the cameras can. So they 'see in the dark' and have been used in several low-light applications.

"But thermal infrared cameras are expensive to buy and to operate. They also produce low-quality images — like those photos of houses in insulation or utility ads that demonstrate heat-loss. The picture is too fuzzy for our purposes."

Then Greg examined the specifications of CCTV cameras already being used for perimeter surveillance.

"The wavelength range of visible light is about 0.3 microns to 0.7 microns," Greg explains. "Infrared light ranges from above 0.7 out past 12 microns — thermal imaging systems are sensitive at the far end of the infrared scale, between eight and 12 microns.

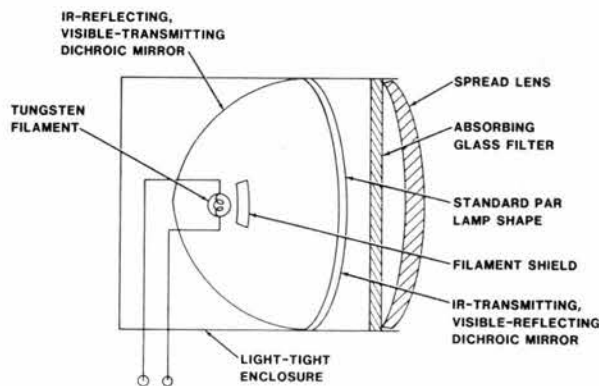
"The CCTV cameras already in place at sensitive installations respond to visible light, of course, but they also respond to what we call Very Near Infrared (VNIR) light — from just over 0.7 microns to above 1.1 microns," continues Greg. "The solution seemed almost too obvious. Illuminate secured areas with VNIR — light that CCTV cameras can see but people cannot see."

Greg demonstrated the feasibility of the new concept to Rich Petersen, then supervisor of 5238. Rich liked what he saw — and what he couldn't see.

Greg received congratulations and went on to other projects. Dan Pritchard (5238) took over the task of designing VNIR floodlights that would work in the field.

"Standard parabolic aluminized reflector lamps produce both VNIR radiation and visible light," says Dan. "Some models used in the movie industry as 'cool' spotlights have reflector coatings that send visible light out the front and allow infrared radiation to vent out the back. So we worked out a floodlight design that reverses that process.

Direct visible light from a tungsten fila-



VNIR FLOODLIGHT'S DESIGN is simple. Visible light is contained within the housing of the fixture by a glass filter that absorbs visible light but allows VNIR light to pass. Dichroic mirrors in the front and back of the lamp itself focus and direct very-near-infrared light out through the filter where it is spread in a flood pattern by the lens.

ment is blocked by a filament shield (see diagram). A specially coated dichroic mirror in the front of the lamp transmits VNIR light but reflects visible light to the back.

In the back of the lamp, another dichroic mirror — the parabolic reflector that focuses the lamp's beam — transmits visible light through the back into the lamp housing, and reflects VNIR light to the front.

In their first field tests, VNIR lamps reduced annoyance to neighbors by cutting visibility from tens of miles to about five hundred feet, and CCTV cameras produced sharp images from the invisible-to-humans light. Later modifications reduced visibility even further with no loss of CCTV acuity.

"Demonstrations of the system are great," says Rick Beckmann. "People sit in a room lighted by ordinary illumination, and we show them their images on a TV monitor. Then we kill the lights. They can't see each other and, of course, there's no TV image either. Then we flip on the VNIR floods. They're all still sitting in a dark room, but they can see clear images of themselves on the TV monitor. It's pretty dramatic."

Last November, GTE/Sylvania delivered 20 prototypes, which Dan's group installed at Sandia for testing. The tests resulted in several design changes that improved the lamp's pattern of light distribution, reduced heat loading, and lowered manufacturing costs. Dan's group continues to test the lamps, seeking to improve their longevity.

GTE/Sylvania is currently under contract to manufacture and deliver 350 improved VNIR lamps. The lamps are scheduled to be installed at an Air Force operations site. Installation designs call for them to be mounted in tandem with visible lights, and under normal conditions, all lights are off. If an alarm occurs, the VNIR lights switch on, allowing assessment with CCTV. If an intrusion occurs, the visible lights can be switched on, enabling the site response force to see — and respond to the intrusion.

GTE/Sylvania may produce VNIR floodlights commercially, offering them to those who want to light building entrances or storage yards for unobtrusive CCTV surveillance.



GREG DONOHOE (1623) AND DAN PRITCHARD (5238) show off GTE/Sylvania's VNIR/PAR Luminaire — the commercial version of the Very-Near-Infrared (VNIR) floodlight Greg and Dan designed. Greg holds an assembled Luminaire. Dan holds the visible light-absorbing glass filter that goes in front of the lamp element itself — on the table, center — inside the Luminaire housing (see diagram).

Congratulations

Paul (3426) and Debbie Salazar, a son, Patrick James, Aug. 7.

Stephen (5245) and Terri (6312) Ortiz, a son, Evan Tyler, July 31.

Ron (1513) and Laurie Akau, twin daughters, Melanie and Stephanie, Aug. 16.

Richard (7482) and Angie Zuni, a daughter, Dominique, July 21.

David (7842) and Gina Bailey, a daughter, Jessica Marie, Aug. 11.

Carl (3461) and Janet (3551) Iafonaro, a daughter, Monica, Aug. 4.

Linda (2627) and Ernie (2541) Garcia, a son, Dominic Andrew, Aug. 1.

Paul (5232) and Debra Wayne, a daughter, Brittany Nicole, Aug. 20.

Claudia (7818) and Larry Jeffery, a daughter, Madelin, Aug. 2.

John (7818) and Janis Kelton, a son, Cody Alan, Aug. 10.

Reuben Rubio (6452) and Kathleen Bowman, married in Albuquerque, Aug. 3.

Richard (7818) and Laree Hammond, a son, Elijah Luke, July 22.

Two Sandians to Speak At Science Network

Two Sandians, Margaret Carroll (7861) and Ruthe Jones (5263), will speak on "Making the Transition from Engineer to Manager" and "Introduction to Artificial Intelligence," respectively, at a Sept. 10 meeting of the Albuquerque membership of the NM Network for Women in Science and Engineering. The meeting, open to all interested, begins at 6:30 at 7701 Summer NE; \$5 includes dinner and drinks. More information and reservations (by Sept. 9) via Jennie Negin (3532) on 266-1983 or Marilyn Morgan on 266-5131.

Take Note

A "Nuclear Update Workshop," sponsored by the American Nuclear Society — Trinity Section and Americans for Rational Energy Alternatives, will be held at the Clarion Four Seasons in Albuquerque on Sept. 6 from 1 to 9 p.m. The workshop will feature technical reviews of four areas of interest to New Mexicans: Source Term, presented by William Stratton, Chairman of the ANS Committee on the Nuclear Source Term; Transportation of Nuclear Waste, Bob Jefferson (ret.), consultant; Waste Isolation Pilot Plant Project (WIPP), Vince Likar, engineer, WIPP; and Uranium Mill Tailings Update, spokesperson for the DOE Uranium Mill Tailings Office.

Following cocktails and dinner (6 to 7:45 p.m.), the audience is invited to participate in a panel discussion. The panel will consist of the afternoon speakers and will be moderated by General Ernest Hardin, DOE, Albuquerque Operations Office. Call Joyce Phillips (2321) on 4-8883 or Evelyn Wade (UNM), 277-5431, for more information and reservations (\$16 for members, \$19 for non-members); reservations are due Sept. 4.

* * *

A major exhibition, "Anasazi World," opens tomorrow at UNM's Maxwell Museum of Anthropology. The exhibit — photo panels of large, dramatic color prints showing archaeological sites in the Four Corners area and modern pueblo villages — explores the relationship between the Anasazi and modern-day pueblo communities and presents new archaeological findings from Anasazi sites. An opening reception will be held Aug. 31 from 1 to 4 p.m.; the exhibition continues through March 1.

Linda Cordell, professor and chairperson of the Department of Anthropology, UNM, and Dewitt Jones, award winning photographer and film producer, are curators of the show. Cordell will present a lecture on the exhibition on Sept. 19, 7:30 p.m., Anthropology Auditorium, Rm. 163 (admission is \$2). The Smithsonian Institution Traveling Exhibition Service will circulate the exhibition across the country beginning next March.

Maxwell Museum is located on the UNM campus at the intersection of University and Grand Northeast. Admission is free. Hours are 9 a.m. to 4 p.m. weekdays, 10 a.m. to 4 p.m. Saturdays; the Museum is closed Sundays and holidays.

* * *

The 14th Annual Albuquerque International Balloon Fiesta will be held Oct. 5-13. Events include weekend mass ascensions; Air Force Thunderbirds, Navy Leapfrogs, and Army Golden Knights precision parachutists; balloon mail; gas balloon race; Morgan horse dressage demonstration; radio-controlled aircraft; Fiesta parade; and kite-flying contest. Two new events have been added this year: a Hot Air/Clean Air Fun Walk/Run and a Race Clinic featuring Dr. Kenneth Cooper will be held Oct. 13; on Oct. 7, the NASA Aerovan will present a free exhibit of current aeronautical research and present and future NASA roles.

Volunteers are welcome to participate. Call Fiesta headquarters (344-3501) if you can help. The office is located at 4804



SENATOR JOHN GLENN, Ranking Minority Member of the Committee on Armed Services, visited Sandia last week. Hosted by President Dacey, Sen. Glenn was briefed on Sandia's work in weapons, arms control and verification, the WIPP program, SDI, and pulsed power.

Hawkins NE.

Bumper stickers and Fiesta programs are available at the LAB NEWS office and in Finance. Call Ruth Birdseye (ret.), 255-6328, for information on hot air balloon and gas balloon pins and patches and balloon calendars.

* * *

The IEEE 11th Videoconference — Fiber Optics Technology and Applications — will be held Sept. 19 from 8:30 a.m. to 2:30 p.m. at the UNM Center for Continuing Education, 1634 University Blvd. NE. The videoconference is directed to working engineers, planners, and all others interested in understanding fiber optics technology and applications from the user's point of view. Seminar highlights include an overview of the basic fiber technology, current applications, emerging applications, and a live interaction with the presenter, Stewart Personick, Division Manager for Trans-switching Technology Research at Bell Communications Research, Inc.

Registration deadline is Sept. 12. For more information on registration or Sandia Institutional Package, call Stan Love (3522), 4-5070.

* * *

The Sanado Woman's Club is holding its annual membership coffee on Sept. 10 at 10 a.m. at the home of Marianne Chiffelle, 809 Morningside NE. Anyone interested in joining the group is welcome. No reservations are necessary and there is no charge. For more information, call Charlotte Johnson, 298-4553, or Sally Clelland, 299-1263.

* * *

An Endangered Species Fair will be held Sept. 7 from 1 to 8 p.m. at the NM Museum of Natural History, 1801 Mountain Rd. NW. The Fair, a free, public event, is designed to promote awareness of New Mexico's endangered animals and plants and their needs.

The Fair is planned as a family event with live animals and plants, films, music, food, displays, a wildlife art exhibit, program, and wildlife-related activities for children. Special attractions will be Roy Geiger of the National Wildlife Federation and his bald eagle "Migisiwa," and Joe Hayes, the story-teller, who will entertain with Native American tales about animals.

Sponsors of the Fair are the Sierra Club, the NM Museum of Natural History, and the NM Department of Game and Fish.

* * *

Watch closely the next time you see a rescue team on the nightly news helping a lost hiker in the Sandias — or any rescue ef-

fort anyplace in NM, for that matter. You're likely to see a Sandian participating in or even directing that effort. Many Sandians — too numerous and often to anonymous to identify — work with various rescue groups: the Albuquerque Mountain Rescue Council, the Sandia Search and Rescue Team, the Amateur Radio Emergency Council, or New Mexico Rescue Dogs, for example. All Bernalillo County search and rescue teams will benefit from the proceeds of "Interior Design 85: the Masters at Tanoan," a tour Sept. 13-18 of a residential home currently under construction and located in a new 27-lot development being built by AmeriWest Homes. Homes being built in the area average \$500,000. Sponsors of the event are the Pi Beta Phi Alumnae Association in conjunction with AmeriWest and the NM Chapter of the American Society of Interior Designers. Tickets are \$4 in advance and \$5 at the door. For more information, call Yvonne Moise at 821-8095.

* * *

Thanks, Sandians. The 10 percent of you selected by the computer to fill out the biennial LAB NEWS survey have responded in record numbers. We've had more than 80 percent returned, a statistical phenomenon. The Statistics, Computing, and Human Factors Division (7223) is helping tabulate and analyze the results, but because of the response, it will be a few weeks, before you'll see the results published. If you haven't yet returned your survey, you can still do so by Sept. 4. Thanks again for taking the time to help us see how we're doing our job.

* * *

You didn't make it to the Deming duck races last week. Now you discover it's Labor Day weekend, and you have nothing planned. Bring the family to KAFB's Labor Day Weekend Extravaganza. The three-day professional rodeo begins tonight at 8 p.m. Tickets are \$2 per night or \$5 for all three nights. If you get to the rodeo early, you can enjoy the sounds of Sharman and the Golden Country Band. The group will begin playing at 6 p.m.

A plethora of activities are available for children and adults on Labor Day from 11 a.m. to 8 p.m. Bands that cater to every musical taste will play all day long. Other featured activities include a chile cookoff, a flea market, the Air Force mini jet, clowns, bingo, face painting, softball, volleyball, horseshoes, 5000- and 10,000-metre runs, and a 10,000-metre bicycle race. Chicken dinners are \$4. For more information, call 4-7815 or 4-5420.

Nondestructive Inspection Technique Determines Strength of Welds

A project team led by Graham Thomas of Acceptance Technology Division 8444 has developed a nondestructive ultrasonic inspection technique that assures the strength of solid state welds. Such welds are sometimes preferable to more common, traditional fusion welding processes.

The team is studying three techniques for forming solid state welds:

- diffusion bonding, in which two metals are heated and pressed together, without deformation, until a metallic bond forms;

- inertia welding, a kind of friction welding in which a part is clamped in a flywheel and spun to a prescribed speed; after the part is released from the power source and allowed to spin freely, it's forced against a second part of a similar or dissimilar material; the friction causes heatup, deformation (necessary to extrude the surface and provide metal-to-metal contact), and bonding; and

- upset welding, which uses large currents to locally heat the surfaces being pressed together, forming a bond across the interface.

With the increased demand for these techniques came the need to measure the strength of the bond and pinpoint any defects (such as non-bonded interfaces, or "unbonds") in the joint. Graham and members of Materials Development Division I 8312 have been working to perfect an ultrasonic weld inspection process that can be used by the weapon production agencies. "Our application of ultrasonics is new — beyond the normal uses at Sandia," says Graham. "We're looking at returning wave forms. Analyzing these wave forms allows us to characterize defects, not just locate them."

The technique is much like sonar or radar, in which high frequency acoustic energy is the interrogation source. Computers scan the parts being subjected to this energy and process the ultrasonic wave forms that result, thus allowing correlation with the strength of the solid state bond.

To inspect the materials, Graham's group immerses samples in a water-filled tank. The water couples the acoustic energy from an ultrasonic transducer into the part. The sound waves range from one MHz up to 100 MHz. A color monitor connected to the computer produces a planar view as well as a cross-sectional scan that shows the depth of the defects. Thus defects may be located in three dimensions. Color Polaroid photos are then made of the bond for further study and documentation.

The project team is now concentrating on two primary areas: first, imaging the flaws with the scanner and displaying two-dimensional views; and second, characterizing the type of defect or determining the strength of a bond.

"Ultrasonic nondestructive testing at Sandia has really improved the last two years," Graham says. "We have acquired a pattern recognition software package to do the signal analysis and have extensively modified it for our applications."

"But we are still in the experimental



IN FRONT of their test equipment are (from left) Graham Thomas and Marv Kelley (both 8444), Ed Christensen (8432), and Ted Ross (summer hire from Carnegie-Mellon). New application of ultrasonics allows weld defects to be characterized, not just located.



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SANDIA'S ROLE over a 20-year period in the Polaris Missile reentry vehicle program was recognized recently when the United Kingdom's representative for the Polaris Reentry System Working Group, Commander John Holmes, presented Dick Claassen (8000) with a framed certificate in calligraphy. Several program participants, including some retirees, attended the ceremony. Principals taking part were (left to right) Bob Hargreaves (8164), Al Wiemken (8431), Dick Claassen, Commander Holmes, retiree Lee Davies, Don Bohrer (8160), John Marion (8151), and retiree Mo Jones. Not shown, retiree Al Ford.

stage. We foresee the possibility of some significant improvements down the road."

Other members of the project team are Marv Kelley (8444), who operates the computer scanning equipment; Ed Christensen

(8432), who interfaced the scanner's motors and data acquisition instruments with the computer; and Ted Ross (summer hire from Carnegie-Mellon), who is developing the control programs for the scanner.



SPENDING THE SUMMER working at Sandia Livermore are two Chabot College transfer students who were awarded scholarships for science and engineering by Sandia. Second from left is Mike Kauffman of San Ramon, who is working in materials testing. He will major in structural engineering at San Jose State in the fall. The other student employee is Monica Johnston, also in materials testing. A Livermore High School graduate, she will major in materials science and engineering at UC Davis this fall. Her Sandia division supervisor is John Brooks (8312) at right. Mike's supervisor is Mike Birnbaum (8243) at left.

RETIRING from Sandia Livermore are (from left) John Rogers (8311), Jane McClure (8022), Lorraine Stamer (8024), and Ray Leri (8265).



MEMBERS OF THE WELLS FARGO guard force at Sandia who were winners in the DOE's 14th annual pistol tournament — "Gunsmoke '85" — are (from left, front) Sgt. Pam James, fourth in the Novice class; Lt. Gary Graff, fourth in Marksman class; Sgt. Betty Moore, second in Expert class. Back row, Tom Cheney, first in Novice class; Rich Kirchgatter, first in Sharpshooter; Lt. Carl Feighner, third in Master; and Lt. Wes Thompson, second in Sharpshooter. Other winners were Todd Keck, first in Expert, and Lt. Scott Overby, fifth in Sharpshooter.

Fun and Games

Tennis — Sandia tennis players recently outdid AT&T Sunnyvale when the two groups got together for the first inter-agency tournament. Sandia Livermore and AT&T each provided five teams for a head-to-head men's and women's doubles match. Each team played a best of three sets out of five, and Sandia won three out of five matches.

Sandia players were George Hirota (8271), Eva Leong (8264), Andy Lutz (8245), Sandy Mondot (8254), Ernie Alford (8161), Jack Swearengen (8473), Howard Royer (8254), Bob Dougherty (8270), Vern Byfield (8274), and Steve Bunn (8272).

Take Note

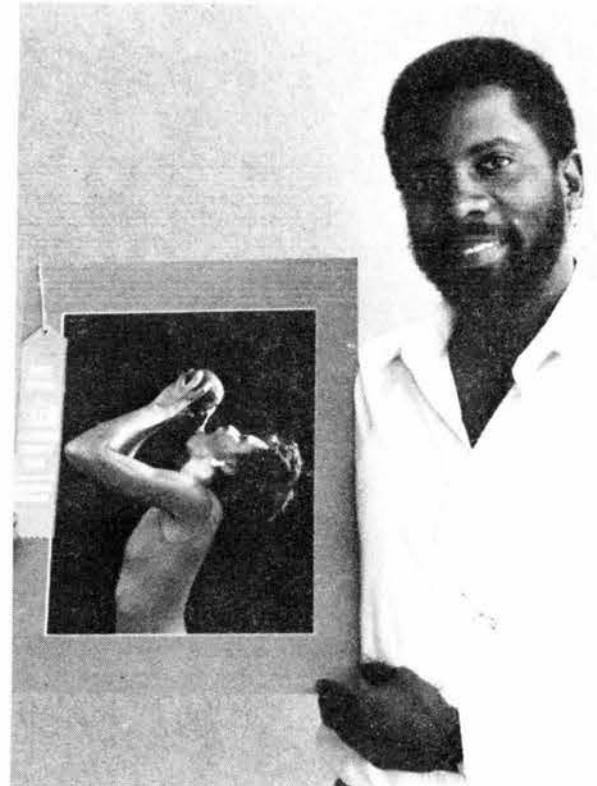
Three Livermore Sandians won first place awards at an International Metallographic Society meeting recently for their poster exhibits. Winning in the Analytical Electron Microscopy class were Fred Greulich (8316), Neville Moody, and Steve Robinson (both 8314). Their exhibit, "Analytical Electron Microscopy of Ti Code 12," demonstrated structure change as a function of annealing temperature.

Herman "Rudy" Johnson (DMTS, 8313), has been selected to share the 1985 Research Award of the Electrodeposition Division of the Electrochemical Society. His co-recipient is former Sandian Jack Dini of LLNL. They are being honored for their research on the use of lasers for accelerating the rate of electrodeposition processes. The awards will be presented during the Society's meeting this October in Las Vegas.

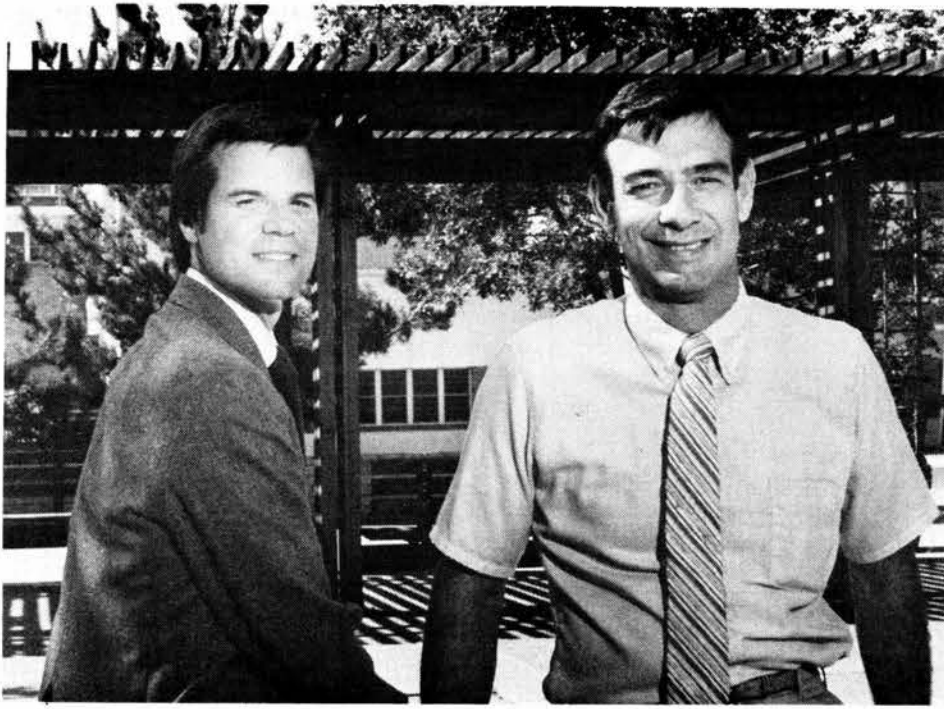
Congratulations

Lori and Dennis Sparger (8362), a son, Kyle Christian, Aug. 13.

Terry Schoeppe (8474) and Eldon Porter (8362), married in Livermore, Aug. 10.



FIRST PLACE in the professional photographers' color category at the Alameda County Fair in Pleasanton recently went to Marv Kelley (8444). His color photo of a young woman drinking coconut milk was part of a series he entered.



JAMIE WICZER (2531) and JERRY ALLEN (2312)



TED DELLIN (2146) and RON JONES (2644)

Supervisory Appointments

JERRY ALLEN to supervisor of Digital Subsystems Division II 2312, effective Aug. 16.

Jerry joined the Labs in November 1981 as a staff member working on radiation effects analysis and testing. Most recently, he's been with Radiation Effects in Microelectronics Division 2155. Before coming to the Labs, he was the ballistic missile officer for radiation hardening of the MX at Norton AFB in California.

Jerry served 20 years in the Air Force. Significant assignments included serving as electronic warfare officer in B-52s, testing the advanced airborne command post at Hanscomb AFB in Boston; and, at KAFB's Air Force Weapons Lab, testing aircraft for the effects of electromagnetic pulse. He also participated in a project that designed and tested shelters — basing systems — for ballistic missiles.

He earned his BS and MS in EE from the Air Force Institute of Technology and an MBA from Auburn University. He's a member of IEEE. Jerry enjoys hiking and computers. He and his wife Nadine have two daughters and live in the NE heights.

JAMIE WICZER to supervisor of Ceramic Components Development Division I 2531, effective Aug. 16.

Jamie joined Sandia in April 1977 as a staff member in the opto-electronics development division, where his work was concerned with firesets and optical impact fuzes. He later transferred to the research directorate and has worked with photovoltaics, optical fiber sensors, radiation-hardened photodiodes, and studies of strained-layer superlattice semiconductor materials for infrared applications.

Jamie received his BS in EE from Purdue and MS and PhD — also in EE — from the University of Illinois. He's a member of IEEE and the Optical Society of America. Beginning this fall, Jamie will teach a graduate-level course in infrared optical engineering at UNM. He enjoys jogging, backpacking, bicycling, photography, and working with small computers. Jamie and his wife Ellen have a one-year-old son. They live in the NE heights.

TED DELLIN, DMTS, to supervisor of

Nonvolatile IC Technology Division 2146, effective Sept. 1.

Ted joined the Labs at Livermore in July 1969. He worked on radiation effects on electrical cabling, electron/photon transport, and the solar central receiver project. Transferring to SNLA in August 1979, Ted continued to work in the solar energy field for two years. For the past five years his work has been with nonvolatile IC technology at the CRM.

He received his BS and MS in physics from Hunter College (New York) and his PhD in solid state physics from City University of New York. He's a member of the American Physical Society and IEEE. He enjoys traveling and politics. Ted, his wife Arlene, and their daughter live in the NE heights.

RON JONES to supervisor of Applied Computer Graphics Division 2644, effective Aug. 16.

Ron's assignments, since joining the Labs in 1967, have been with the Computing Directorate 2600 as a mathematician and

scientific computing programmer and consultant. His initial work was with the Sandia Mathematical Program Library project. In addition to that 10-year project, he prepared scientific application programs on request from organizations throughout the Labs. For example, he wrote the QMESH family of finite element mesh generation codes. From 1978 to '83, he was with Computer Consulting and Training Division 2614, where he was a programming consultant for Fortran and Pascal, and taught a number of classes, including the introduction of the CRAY I system to Sandia. Most recently, Ron has served as the Computer Ombudsman in Communications and Operations Department 2630.

He received a BS from Texas Tech, MS from the University of Wisconsin, and PhD from UNM — all in mathematics. He is a member of the Association for Computing Machinery, the Rio Grande Chapter of ACM, and the SIGNUM interest group. He enjoys church activities, gardening, and golf. He and his wife Mary Esther have a son. They live in the NW valley.



RETIRING at the end of September are (front row, from left) Inez Maes (3422), Shary Holmes (7473), Dick Siebenforcher (150), Bill Pepper (1632), Jose Ortiz (2631), Geronimo Fragua (7476), and Herbert Stanley (7544). In the second row are Angie Granger (3422), Lewis Fjelseth (7232), Ray Beall (3241), Peggy Box (4000), Pat Self (3733), Frank Fuentes (7476), and Abel Lucero (3428). In the third row are Jim May (5252), John Miller (3429), Nick Bougeois, Jr. (5238), and Leo Cordova (3427). In the top row are John (Jack) Barnum (2321), Frank Daut (2544), Don Harrison (3422), Henry Aira (3423), and Billy Yates (3461).

Fun & Games

Running — The 11th Annual "M" Mountain 9-Miler is scheduled Saturday, Sept. 21, at New Mexico Tech in Socorro. The nine-mile course begins on the NMIMT campus, continues through the desert to the base of "M" Mountain, and returns to campus. Socorro's elevation is 4600 feet, and the paved course rises 300 feet.

The run has both male and female divisions in standard age categories. Teams of three individuals, who run three miles each, may also compete as well as those in a walking category. Prizes will be awarded winners in each category.

Registration fee is \$5 before the race, \$7 on race day. LAB NEWS, Bldg. 814, has entry forms.

* * *

Windsurfing — SERP is offering windsurfing classes for beginners. Each class will meet for two sessions — Thursdays from 5:30 to 7:30 p.m. at the Coronado Club and Saturdays from 9 a.m. to 5 p.m. at Cochiti Lake. Four classes are scheduled: on Sept. 5 and 7, 12 and 14, 19 and 21, and 26 and 28. Enrollment fee is \$38.

One intermediate session is offered on Saturday, Sept. 29 from 9 to 5 at Cochiti Lake. Fee is \$28. Call the SERP office, 4-8486, for details and registration.

* * *

Sporting Skills — New Mexico Tech is sponsoring an event called "Super Stars" on Saturday, Sept. 14, in Socorro. With 17 separate competitions for men and women, the meet has a separate scoring system for each. Running, frisbee tossing, softball slugging, basketball shooting, skateboarding, biking, rope skipping, and pool shooting are some of the contests. Individuals and teams of four may enter. The idea is to rack up as many points as possible in all of the events. LAB NEWS office (Bldg. 814) has literature with the details.

* * *

Boating Safety — A 13-week course in boat handling and safety, power and sail, is offered by the U.S. Coast Guard Auxiliary. First class meets Wednesday, Sept. 11, at 7 p.m. at the Armed Forces Reserve Center, 400 Wyoming NE. There is a small fee for text and supplies. For details, call Carl Boxx (ret.), 299-2855.

* * *

Bicycling — Joel Siemers (2331) recently won the 15th annual Shasta Jamboree, sponsored by the Shasta Wheelmen at Lassen National Park, Calif. Joel's winning time of 4 hours, 58 minutes was a record for the course. The event was a bicycle tour, rather than a race. Joel explains that on a tour people can "come along just for the ride," while others, like Joel, race to win. "Last year I did so poorly that I vowed I'd go back this year and do it right," he says. The course was 100 miles long and involved total climbs of about 10,000 feet.

Not content with that success, Joel went on to win the citizen's (or non-sanctioned) category of the Sandia Crest Hillclimb, Aug. 17, with a time of 1 hour 24 minutes 46 seconds. (Since Joel is not a member of the US Cycling Federation, he is not allowed to compete in its sanctioned races.) Some 60 cyclists competed in the citizen's race. Other Sandians participating were Bruce



THE WINNING STRIDE is demonstrated by Bill Asher, supervisor of Maintenance Operations Planning Division 7815. Bill took three first-place gold medals and two second-place silver medals in competitions (60-64 category) during the recent New Mexico Senior Olympics in Las Vegas. Bill won the mile, the 50-yard dash, and the long jump, and came in second in the 100-yard dash and the 440 relay team event. Joe Miller (ret.) took first in the 50-yard swimming competition.



CHAMPION BODY-BUILDER in New Mexico is Dallas Allen (314), who was judged first in the over-35 category during the recent state contest held in Albuquerque. Earlier this year he took second place in the Mid-USA regional contest with competitors from a six state area. Dallas started body building in 1978, concentrating on power lifting. He was the 1981 state champ in the light heavy-weight class. Dallas works out two hours daily and, a month before a competition, goes on a strict boiled egg white and tuna fish diet to remove fat cells and to make his muscles and veins stand out. "It works," he says, "but it's not very exciting."

Events Calendar

Aug. 31 — Summerfest: Carnival Day the United Way, 1985 United Way Campaign Kick-Off, 4-10 p.m., Civic Plaza, 766-7660.

Boughton (5214), who placed seventh, and Earl Creel, 15th.

Joel bikes 200 to 250 miles a week, including his daily commute to work.

Sept. 2 — International Celebrity Series: Dr. Ruth Westheimer, lecture on sex therapy, 8 p.m., Popejoy, 277-3121.

Sept. 5 — Showtime at the KiMo — Contemporary Dance Alliance, 8 p.m., KiMo.

Sept. 6-22 — New Mexico State Fair.

Sept. 7 — Tom Splitt, pianist, 8 p.m., KiMo.

feed back

Q. We have equipment that requires frequent service, usually on short notice. Until the repair people are cleared, we must type an Escort form, hunt down the maintenance contract buyer, and then take the form to the badge office. Why can't a blanket authorization be issued for the service people until their clearance comes in?

A. DOE policy mandates that SNL follow certain procedures concerning Access Control, including the area of Uncleared Administrative Escort. Sandia must be able to prove to the DOE that uncleared individuals' or contractors' visits are justified. This requires the line organization to fill out a form and to supply all pertinent information and operational approval including the purchase order number and buyer. This form must then be brought to the Badge Office so operational approvals can be checked and the proper form can be prepared and entered into Sandia's data base. A blanket authorization is not feasible: each visit must be justified and checked with Purchasing. Your request for administrative escort can be expedited if you know the purchase order number and the buyer. The Security Brief issued February 1983 further defines these procedures.

J.D. Martin — 3400

Q. Custodial Services should furnish cleanser in the custodial washrooms for all employees to use to clean coffee cups and coffeemakers. Also towels should be available near the microwave ovens. Also, the sign in the custodial washroom asks that we keep the room as clean as we find it; that is a difficult task, since the custodians themselves leave the room messy (the sinks are RARELY scoured, at least in our building). There may be a shortage of personnel, but we can all do our part.

A. Custodial Services currently does furnish cleanser and towels in the custodial washrooms for employees to use to clean items such as coffee cups and coffeemakers. If the room happens to be out, you may obtain additional supplies from unlocked custodial supply cabinets or rooms, by asking a custodian, or by ordering supplies from General Stores.

Except for remote areas, Sandia does not furnish microwave ovens for employee lunch preparation. Microwave ovens in vending machine areas are furnished and serviced by the vending machine contractor. Even so, you may obtain custodial supplies as noted above to meet your needs.

J.D. Martin — 3400

Q. Too often the security inspectors don't unlock both doors in a set of double doors. Is this a directed practice to save guards' time? Or laziness on their part to not unlock all doors? If the former, I'd appreciate knowing what to expect (e.g. right hand door on entrance will be locked). If the latter, I'd appreciate instructions to the guards to unlock all doors.



"IN RECOGNITION of his sustained outstanding leadership role in the development and implementation of advanced physical security systems for nuclear materials at facilities or in transit." So reads the Distinguished Service Award presented to Jim "Jake" Jacobs, manager of Safeguards Engineering Department I 5260, by the Institute of Nuclear Materials Management. Jake formed and led a division involved in advanced development of SST-type (Safe Secure Transport) technology, was program manager for the first high-tech security system implemented at Pantex, and, most recently, managed the DOE's OSS (Office of Safeguards and Security) program, which was instrumental in upgrading security at many nuclear weapon sites in the U.S.

A. It is Security's policy to unlock both sides of double doors. Please call 4-3155 to report specific instances if this policy is violated.

J.D. Martin — 3400

Q. What happened to the agreement with the Air Force to stagger working hours to ease traffic congestion?

A. There has been no change in the agreement to stagger working hours. Air Force personnel are scheduled to work from 7:15 to 4:00, DOE/AL from 7:45 to 4:15 and Sandia from 8:00 to 4:30. The fact that some Air Force personnel may not be maintaining their normal schedule is insufficient reason for Sandia to unilaterally change its working hours.

J.D. Martin — 3400

Q. As a custodian at SNL, I note that most (if not all) offices discard reading material that would benefit other Sandians and, in the long run, benefit Sandia financially. The materials should be put in a central location (such as the library) for pick up by interested parties.

A. Many people wince when they see reading materials discarded, and I can sympathize with that reaction. As you point out, however, it would be costly in terms of personnel to pick up, arrange, and redistribute such material. At this time, the Library and many other administrative organizations are undergoing reductions in staffing. It is, therefore, impossible to consider adding another service to the administrative workload.

Any individual organizations wishing to recycle used reading materials are of

Welcome

Albuquerque

Shirleen Perez (3426)
Michael Torneby (3426)

Arizona

Edward Fronczak (7262)
Karl Ricker (7251)

California

James Engstrom (1134)

Florida

Robert Palmquist (2542)

Missouri

Larry Shippers (6431)

Texas

Wesley Fan (2322)

course, welcome to establish their own procedures.

H.M. Willis — 3100

Q. Why can't I cash a Sandia check for reimbursement for company travel? Finance refused to cash the check because it was a "personal check."

A. As noted in the Weekly Bulletin dated April 18, 1985, Sandia Finance found it necessary to "temporarily discontinue" cashing personal checks, issuing travelers cheques for personal use, and making change. We expect to be able to reinstate this benefit some time in the next several months.

If you want cash for your reimbursement for company travel, you (or an employee designated by you) should present your expense voucher with the original and all copies to a Finance teller for cash. This policy has been in effect for one and a half years and, of course, eliminates the added steps of Sandia's issuing a check only to turn around and cash it.

Q.B. San Hamel — 4000

Q. The carpool parking area near Bldg. 332 was at one time well marked and, with a few exceptions, operated satisfactorily. Now that we have a parking crunch, only one sign exists and it faces away from approaching traffic. This in essence eliminates this area for "car pool only" parking. I suggest that Plant Engineering review the lot marking program in all areas and improve the signs to be more apparent.

A. The present parking plan around Buildings 831 and 832 was designed with the assistance and approval of managers within the two buildings. The primary purpose of these lots is to serve the users and visitors of 831 and 832. Because of the reduced number of parking spaces during the construction of Bldg. 831, we found it appropriate to have open parking on a first-come, first-served basis. A few additional parking spaces will become available at the completion of construction on Bldg. 831. A return of selected reserved car pool spaces near Bldgs. 831/832 will be reviewed at that time.

Sandia plans to have an additional 1900 paved parking spaces by September 1985. Unfortunately, because of the building program, close-in parking is becoming a thing of the past.

R.W. Hunnicutt — 7800

European Battlefields — Some Are Memorable

by John Shunny (Ret.)

We went to Europe last summer, my wife and I, to see the tennis of Wimbledon, then to spend a week in Germany (Bavaria) visiting friends. Wimbledon was, as the British put it, a bit of a thing inasmuch as we watched most of the matches on the TV in our London apartment. Suffice it to say that if you're planning Wimbledon for 1986, call me. I have some sobering news for you, unless you happen to be a blood relative of the Queen.

After London, we set out for the continent, where our destination in West Germany was Bayreuth. But here we were in Brussels, Belgium, with a new VW (rented), and the moment was opportune to indulge an interest in military history, driving as we would through the borderlands of Belgium, France, and Germany. It's a countryside in which battlefields abound and, from the many, I selected three that were more or less en route: Waterloo, Bastogne, and Verdun.

Waterloo is where Napoleon met his in June 1815 in the person of the Duke of Wellington. He was thrashed, the French army was routed, and Napoleon abdicated. The course of history was changed. Today in Waterloo, a small town a few kilometers south of Brussels, you can climb the "Lion's Mound," said to consist of the battlefield's rubble, and from the top look over the farmlands where the battle took place. Land is precious in these small countries, and it's difficult to set aside large chunks to commemorate historic happenings. The battle of Waterloo is also depicted in a huge panoramic painting, housed in a circular building nearby. We drove on to Bastogne.

Bastogne, as late movie watchers know, was the focus of the Battle of the Bulge in WWII. It was December 1944, the Allies were on the German borders, and a desperate Hitler in one final throw of the dice ordered all-out assault upon a quiet sector of the Allied lines in the Ardennes. The line gave under the assault, creating the "bulge," and the town of Bastogne became the focus of the German onslaught. But General Patton and his armor made a successful dash to the beleaguered area, saving the day, together with the allied air force which, up to that time, had not been able to fly because of bad weather.

The town of Bastogne today reminds me of one of those lottery winners who appear on TV, dazed, self-conscious, and saying all the obvious things. Bastogne appears to be infected by the species *promoter*. One hand-out for their exhibition center reports breathlessly: "At the same time you may also see the 'Nut's Cave, a NEVER TO BE FORGOTTEN EXPERIENCE! The cave when McAuliffe actually said his 'MEMORABLE NUTS.'" I puzzled over this, then concluded that an inept translator took the French word *cave* to be the same in English when, in fact, a *cave* is a cellar, and that's where General McAuliffe said, simply, "Nuts" when a German officer under a flag of truce suggested surrender. The German officer was befuddled by the response but finally got the message.

I was a bit discouraged by our battle

field tour up to this point but, shortly, we crossed into France and came to Verdun. Our day there stands out. Memorable, truly memorable.

First, a primer on this epic battle of World War I. It was February 1916, and the war that everyone had assumed would be over in a matter of months was hopelessly bogged down and well into its second year. In the trenches of northern France hundreds of thousands had been lost in the effort by both sides to break the stalemate. German General Erich von Falkenhayn had decided that Verdun and its fortifications were the keystone of the French defensive line; if these fell, the entire defensive system stretching from the Channel to the Swiss border would unravel. The psychological impact on the French would be devastating — it could mean the end of the war.

Von Falkenhayn's appraisal of Verdun was accurate, or at least the French so thought, because their resolve never to forsake Verdun — "Ils ne passeront pas" (They shall not pass) — was a match for the German resolve to take this bastion.

So, in February 1916, began the German assault, contesting an area someone has noted as "not much bigger than a city park," about 120 square miles. Von Falkenhayn was confident of victory, having already concluded that the German forces could "bleed the French white" in the unlikely event that the assault failed. It did fail, and repeated assaults failed, notwithstanding millions of artillery shells, poison gas, and all the other refinements of arms born of the twentieth century. At battle's end, 10 months later, the German and the French, both bled white, gazed at one another essentially from their original positions. Depending upon your source, from three quarters of a million to a million men of the two million involved had died. Verdun, as author Alistair Horne puts it in *The Price of Glory*, "came to gain the unenviable reputation of being the battlefield with the highest density of dead per square yard that has probably ever been known."

Today the battlefield is a reservation and is preserved as part of the French national forest system. Heavily overgrown with secondary growth trees and shrubs, it is not easily penetrated and, in any case, casual excursions are "interdit" — forbidden — chiefly because of the French reverence for this holy ground, still pockmarked by shell holes. There's a practical reason as well: unexploded shells and mines.

The visitor may, however, drive over

much of the reservation and walk on designated footpaths to various points of interest: Fleury, one of several villages totally effaced in the battle; Fort de Douaumont, Fort de Vaux and Fort de Souville, Le Morte Homme, and others. Cemeteries, large and small, French and German, are everywhere. The effect is so doleful as to cause pain.

Perhaps the most eerie experience is a walk through the underground Fort de Douaumont, the principal fortress of a cluster that was captured by the Germans early in the battle but later recaptured by the French. Once inside the fort you're on your own in the dimly lit galleries that extend in every direction. Water drips from the limestone ceilings, and your footsteps resonate. Casemates off the galleries still contain the soldiers's metal bunks, their washrooms, and the other homely appurtenances of day-to-day living. It's not at all difficult to imagine the din of battle in such surroundings.

The Verdun battlefield has an excellent museum, but the single most striking edifice is the Ossuary at Douaumont, striking in both the physical and spiritual sense. When the war ground to an end in November 1918, the French were confronted with this chaotic battlefield, devastated by more than four years of appalling conflict. To their credit, they meticulously combed the area for the remains of French and German soldiers. Those that were identifiable were buried in one of the numerous military cemeteries. But many remains were not identifiable, and their number reflects the fury of the battle in which they died: 130,000.

These are the remains collected in vaults in the Ossuary, a long cathedral-like structure. It is a sombre place. If you wish, you may peer through small windows into the vaults. You see bones, human bones, piled upon bones in infinite profusion. Human bones are not repellent, but the knowledge that each skull or thigh represents a brave man cut down in his youth makes this sight at the Ossuary at once grotesque and overwhelming. You do not forget it.

Logistics — Verdun, a small town of medieval vintage, is off the tourist track some 150 miles northeast of Paris. From Brussels, it's about the same distance to the southeast. We found the town to be charming and unpretentious, with modest but good hotels. I think we were the only Americans there; for that matter, there were few other tourists.



AT BASTOGNE, a statue of General McAuliffe and an American tank mark the main intersection. John Shunny (ret.) is eyeball-to-eyeball with the General.

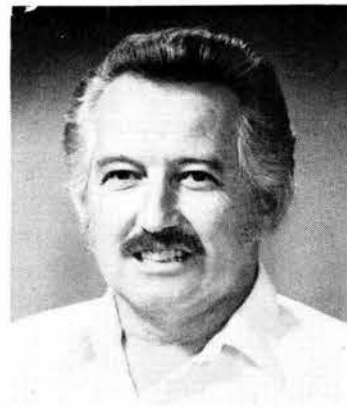
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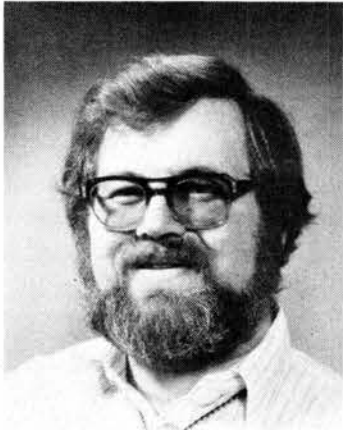
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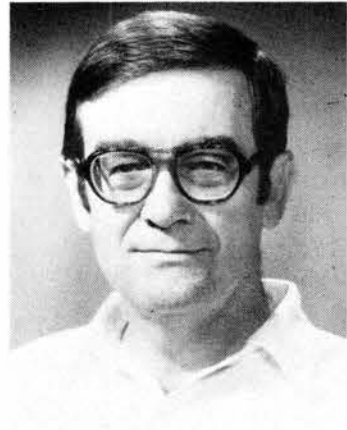
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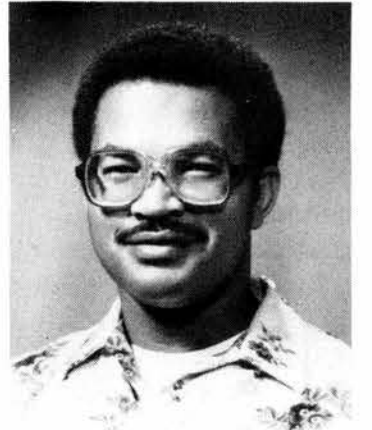
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Larry Buxton (6444) 15



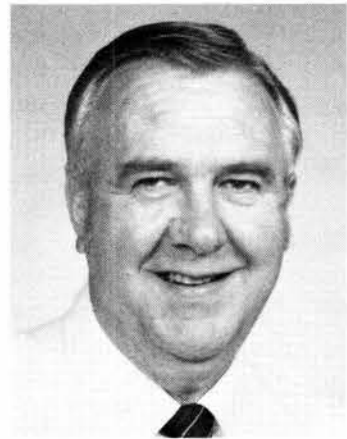
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Leroy Holmes (3425) 15



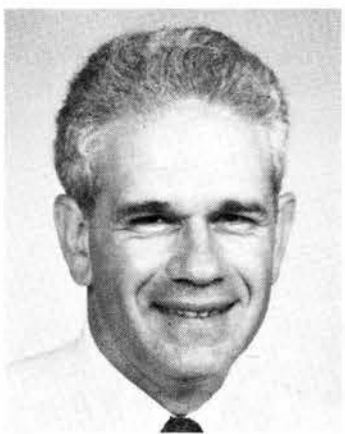
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Jim Bauman (8135) 25



Pat Anderson (7522) 35



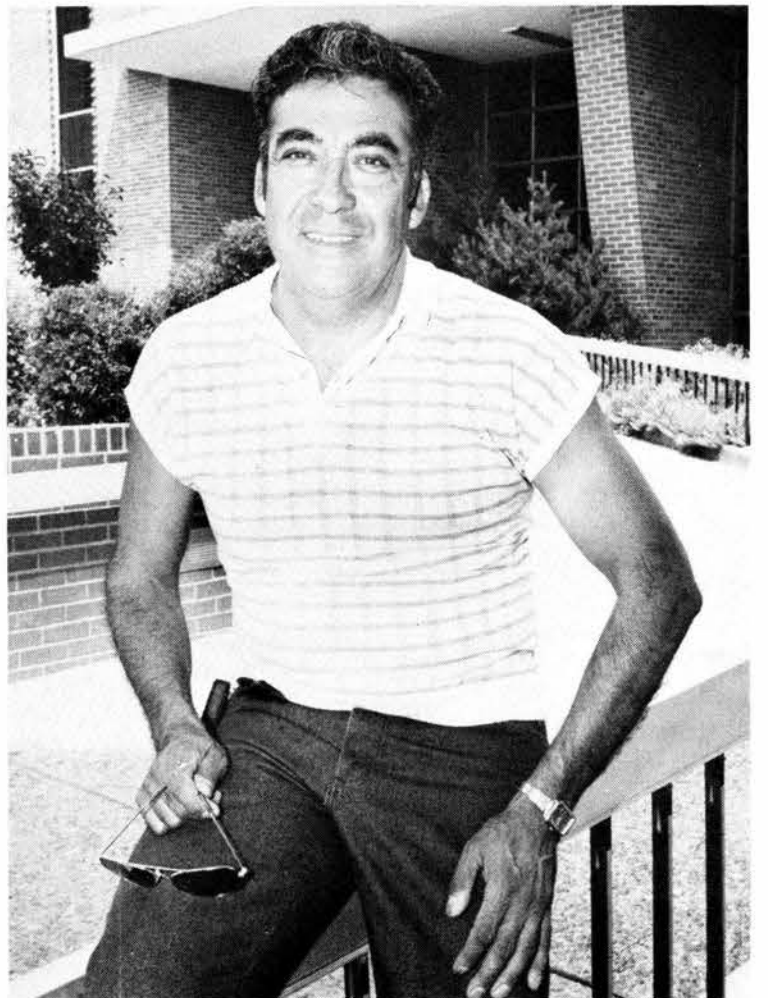
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Ron Gorniak (8234) 15



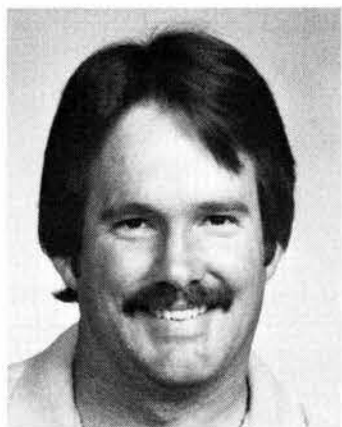
Dave Chin (8272) 10



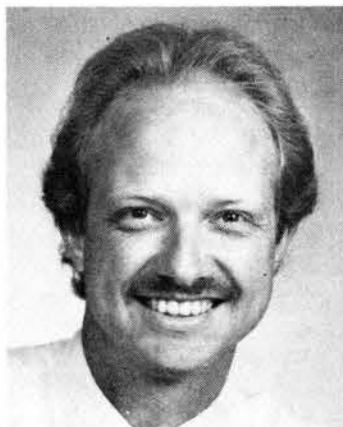
Federico Salas (7813) 20



Karen Quock (8261) 25



Jim Hachman (8274) 10



Mike Dyer (8362) 10

Deadline: Friday noon before week of publication unless changed by holiday. Mail to: Div. 3162.

Ad Rules

1. Limit 20 words, including last name and home phone.
2. Include organization and full name with each ad submission.
3. Submit each ad in writing. No phone-ins.
4. Use 8½ by 11-inch paper.
5. Use separate sheet for each ad category.
6. Type or print ads legibly; use only accepted abbreviations.
7. One ad per issue per category.
8. No more than two insertions of same ad.
9. No "For Rent" ads except for employees on temporary assignments.
10. No commercial ads.
11. For active and retired Sandians and DOE employees only.
12. Housing listed for sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

TWO slotted 4-hole VW Bug rims w/mounted tires, \$17; free blue bathroom wall sink w/legs. Zirzow, 294-7296.

SWING SET, \$25; Jungle Gym, \$20; cast iron bathtub, \$25; 3'x5' sliding window, \$15; 3'x3' sliding window, \$10. Reif, 299-2665.

SOUND DESIGN stereo, cassette w/speakers, \$60; GE stereo console, AM/FM, \$65; stand for 25" TV, \$25. Bliss, 296-3752.

SHOTHELL reloaders (2), 12 ga. MEC 400, \$25; 20 ga. Bair, \$25 or both for \$40, includes extra load bars & manuals. Snyder, 296-5771.

HAMILTON Westminster chime mantle clock, brand new, retails over \$400, sell \$250. Harrison, 883-5411.

WATERBED, king, heated, equalized body support, maximum motion reduction, padded side rails, sheet set, pillow cases, \$250. Clendenin, 299-2071.

AUTOMATIC gas dryer, Norge, white, new pilot light assembly, \$75. Brion, 298-1761.

WEIGHT bench w/leg lift, 5-position tilt back; never assembled, in unopened carton, new \$80, sell \$65. Schkade, 292-5126.

WROUGHT iron & redwood panel fence, 40" high & 8' long, plus 3' wide gate, \$35. Crowther, 821-0172.

NEW Standard Encyclopedias, '82 edition, & bookcase, \$200. Owen, 299-3487.

KEESHOND puppies, pure-bred but no papers, ready by end of Aug., \$125 ea. Bates, 296-1710.

KEYBOARD, 49-key, 8-note Polyphonic w/auto, accompaniment & 12 sounds/rhythms, w/case; paid \$375, sell \$225. Caskey, 296-6372.

STARCRAFT camp trailer, 1977 Galaxy 8, \$2100. Dupree, 294-1835.

TWO F-78-14 snow tires, used less than 50 miles, \$20 each. Volk, 299-1702.

KING SIZE bdr. set: mattress, box springs, bookcase headboard, 6-dwr. dresser, \$350; Nikon FM w/135mm F2.8 telephoto lens, \$325. Ford, 294-8776.

13" VIOLA or ¾ violin, \$200; boys or girls 20" bicycle, \$60. Widman, 293-7279.

RICKENBACKER 4001 bass, natural finish, w/case, \$375. Miller, 296-8724.

JAYCO tent trailer, sleeps 8, \$1000. Rieden, 281-9491.

CHILD'S dresser, white; 420 yds. dark brown macrame cord, 500 yds. natural jute macrame cord. Rodacy, 293-2668.

CANON AE1 w/zoom lens, flash, & bag, \$200. Anderson, 836-5483.

WATERBED, complete queen size bed

including a six-dwr. pedestal, \$200. Dell, 291-0274.

106' of 1" gas pipe plus fittings, \$40 for all. Halbleib, 296-2682.

CHEMISTRY set: 35 pc. Mr. Wizard crystal-growing set, unopened, cost \$30, sell \$15. Gerwin, 881-0028.

CEILING light, wrought iron, 4 bulbs \$50; patio table, wrought iron, \$50; table tops, plywood, 4'x8', 2 ea., \$10 ea. Garcia, 888-4735.

8' SLIDING glass patio door w/screen door, \$50 OBO. Balthaser, 298-5794.

PIANO, Baldwin, fruitwood finish, \$850. Clauser, 898-1814.

PIANO, upright, antique-style, made in England, needs tuning, \$350. Schumann, 294-6197.

RV awning, 17' AE8000, new, still in box, \$525. Fine, 268-4491.

OSTER kitchen center, \$95. Miller, 268-5992.

BLACK love seat couch, \$50; clear glass chandelier, \$40; GE oven range hood, \$20. Tripp, 822-8580.

CORNET, Reynolds, \$100. Brower, 298-2254.

ANTIQUES: hall tree, ornate coffee table, full bed, walnut dresser w/marble top, hi-boy w/pressed drawers, oak dresser. Holland, 266-1950.

ORGAN, Hammond Model RT-3, full AGO pedal board & solo unit, Leslie speaker, cherry cabinet, book value \$1650. Blejwas, 294-2057.

STUDIO couch, corner type, daytime couch, nighttime bed, w/arm cushions, cost \$250, sell \$125; couch w/Mr. & Mrs. chairs & ottoman, coffee table, end table, cost \$800, sell \$400. Arana, 247-3298.

LAWN mower, \$30. Passman, 821-4999.

WINCHESTER rifle, 30-06, pre-1964 Model 70, Weaver K-4 scope, 4 boxes ammo, carry case, \$425. Sheaffer, 255-9473.

ELECTRIC wall heater, 220 volt, 5000 watt, fan driven, adjustable, thermostatically controlled, \$50 OBO. Kubiak, 265-6525.

RADIO Shack TRS80 Model 1, full system w/RS232 & modem, 2 disks, printer, extra monitor, carrying cases, table, software, books, magazines, \$900. Barnette, 292-5186.

AUTHENTIC German pram style baby buggy, homemade cushions, \$325 OBO; 8'x7' folding garage doors, hardware included, \$100 OBO. Tibbetts, 293-2856.

AIR conditioner, refrigeration type, for window, 5000 BTU per hour, \$150. Moss, 298-2643.

BABY crib, full size 54x30, w/new mattress, \$55. Dyer, 242-8830.

SEARS humidifier, output of 7 gals./24 hrs., adjustable humidity control, \$45. Chao, 292-0163.

KENWOOD stereo cabinet, \$45; dinette table, \$45; 2 lg. end tables, \$40. Riley, 292-0163.

HEDGE trimmer, Sears Bushwacker, 18" blade, almost new, \$25; Aqua-Line kitchen faucet, washerless, w/spray attachment, \$12. Auerbach, 296-1489.

ARABIAN gelding, 11 yrs. old, trained, white, \$2500, terms. Ellis, 869-3582.

BABY crib w/mattress & bumper pad \$80; 1 set twin headboards, \$25; playpen, \$25; highchair, \$10. Knight, 836-7149.

TWO wood spoke wagon wheels, 40 & 47 inch diameter; 5HP motor scooter. Wilson, 299-1480.

KENMORE high efficiency, window-mounted refrigerated air conditioner, 14,000 BTU rating, \$300. Biringer, 821-8741.

ELECTRIC baseboard heater, Dayton, 10' long, w/temperature control, \$25. Harvey, 242-1619.

'71 VW gas tank and rear/side windows; 280Z rims/hubcaps; Ford split rims; Nissan 4x4 wheels/tires. Cassell, 298-5262.

BABY CRIB, new, used 4 mos., \$25; highchair, \$5; box of baby blankets & cloth, \$5. Caton, 293-9584.

CLARINETS: 1 Vito, 1 Bundy, student clarinets, both need pad jobs, \$80

each OBO. Day, 296-7473.

4 EA. P185/80R14 tires/wheels/rims; White sewing machine w/cam attachments, best offer. Shoemaker, 884-4596.

CARPET, pale green nylon, 12'x12' w/pad, \$38; Yamaha flute, \$195. Caskey, 294-3218.

BROTHER electronic printer EP-20, \$60; science encyclopedias (grade school), \$15; dresser, \$35; cabinet, \$45; Pro golf bag, \$45; 20" bike, \$30. Vittioe, 299-9298.

WOOD picnic table, 6', w/attached benches, \$15. Maloney, 821-6661.

SMITH & WESSON .22 cal. revolver, Model 34, 2" snub nose barrel, w/ holster. Lewis, 296-7896.

MINI-BINOCULARS: 10x25 roof prism, Celestron, compact & lightweight, largest magnification to hand-hold, with case & strap, \$50. Stevens, 299-6086.

FRENCH doors for sliding glass door conversion, \$45 ea., \$80 pair; 25" Nishiki 10-spd. bike, \$95. Riggan, 268-1961.

ORGAN, Kimball Caravan, new \$1495, sell \$950. Myers, 299-4244 after holiday.

NISHIKI 12-spd. bike, \$100; heirloom Indian jewelry; Bessler B&W enlarger (never used), w/darkroom equipment. Scott-Patterson, 299-1211.

CAMPER, 8' slide-in, cabover bunk, stove, heater, icebox, jacks, tie-downs, chemical toilet, \$1100. Key, 298-7988.

TRANSPORTATION

'68 OLDS 98 sedan, everything works, 2 mounted studded snow tires, \$1500. Brown, 298-0531.

'76 FORD F-100 pickup, 4x4, \$2695; '83 Prowler travel trailer, 21', \$6500. Mares, 884-4843, 2726 Dallas NE.

'70 PONTIAC LeMans Sport, 2-dr., 350CI engine, AT, blue w/black vinyl top, chrome rims, \$1100. Martinez, 821-6096.

'85 YAMAHA TRI-Z 250 3-wheeler, 5-spd. trans., extras, cost \$2700, make offer. Hurley, 296-9264.

'69 INT SCOUT, V8 304, 4x4, 3-spd., AC, \$1800. Wade, 892-1216.

'72 SPORT LeMans, 1 owner, 6-speaker stereo, Concord 25wt, 350 motor had major tune up, SB radials, trailer hitch, \$1500. Neilson, 821-5477.

'76 TR7 coupe; '78 Oldsmobile stn. wgn. w/new diesel engine; '82 1-ton van; '83 Cavalier wgn. Clement, 299-2324.

'77 TOYOTA Celica GT, 5-spd., CC, AC, AM/FM cassette-stereo, new upholstery, radials, \$2400. Gomez, 821-0685.

'69 VW dune buggy, new engine, clutch, battery, carb., \$600. Lujan, 836-3911 after 5.

'74 BUICK LeSabre, recently rebuilt trans., new master cylinder, below book, \$850 OBO. Summers, 881-7765.

'84 CHEV. 4x4 ½-ton pickup, loaded, \$10,575. Johnston, 869-9121.

'68 INTERNATIONAL ¾-ton pickup, AC, PS, PB, AT, equipped to tow 5th wheels, \$2200; '73 Winnebago 27' 5th-wheel trailer, all accessories, \$6750. Knapp, 281-3192.

'69 CHEV. IMPALA, PS, PB, \$450 OBO. Sniegowski, 897-0828.

'83 CHRYSLER 5th Ave., fully loaded, sunroof, gray leather, \$1800 below retail. Carli, 298-9271.

'76 FORD ¾-ton pickup, 360, dual tanks, sliding rear window, price negotiable. Hesck, 892-2105.

'74 MGB/GT, rebuilt engine, best offer. Dunkin, 892-8234.

'81 VW Scirocco S, AC, 5-spd., AM-FM, spoiler, louvers, red, 59K miles, \$5600 OBO. Earley, 296-7383.

'82 YAMAHA SECA 650, 550 miles, new, full warranty, \$1800 OBO. MacCosbe, 299-0557.

'76 CHEVY Nova, 4-dr., AT, AC, PB, PS, AM radio, \$1200. Miller, 296-8724.

'73 VEGA 2-dr. HB, rebuilt engine, new: tires, brakes, seat covers, hoses; orig. owner, records, \$550 OBO. Lambert, 344-9012.

BOAT, 15' Glassmaster, covered bow w/walk-through windshield, 65HP Mercury outboard, complete ski equipment & extras. Shead, 298-3373.

BOYS bicycle, 24", 10-spd., Sears. Eldredge, 881-4528.

'78 RABBIT, 4-dr., factory air, 52K miles, AM/FM, new tires, \$2100 Smith, 255-5662.

'75 PONTIAC Astre, fastback, cast iron 4-cyl., 5-spd., new tires, \$950 OBO. Tarbell, 292-0141.

'68 SHELBY 428KR, \$12K OBO, no trade. Frye, 897-4258.

'67 HONDA Superhawk, 305cc, cosmetically restored 4 yrs. ago, less than 10K miles, \$650. Salmen, 266-0402.

'72 MERCEDES 280SE, 4.5 liter, brown w/bamboo interior, 76K miles, \$8900. Holland, 266-1950.

BICYCLE, men's 26", 3-spd., \$25. Blejwas, 294-2057.

'67 MGB/GT, \$3K. Koontz, 892-8437.

'74 CAPRI V6, 4-spd., 62K miles, \$1200 OBO; '65 Dodge pickup, 6-cyl., ½-ton, \$750 OBO. Bott, 296-7998.

'79 DODGE Super 150, about 75K miles, 2-tone brown, 8' bed, \$3K. Ellis, 869-3582.

'75 MK 4 Lincoln Continental, \$995. Gunderson, 298-2133.

'80 MAZDA GLC, 59K miles, luggage rack, hatchback, AM/FM, \$2100. Burchard, 294-3557.

'76 MINNIE WINNIE 20' motor home, sleeps 6, Dodge 360 chassis, 44K miles, dash air, \$10,995 OBO. Surdahl, 298-2070.

'65 MUSTANG, all original, 107K, 289 V8, 4-spd., R&H, \$3200. Ferguson, 266-4769.

'60 WILLYS utility wagon, \$1300. Knight, 836-7149.

'84 PONTIAC Trans Am, T-top, 5-spd., tinted windows, louver, Black. Yawakie, 883-4422.

'75 ALFA ROMEO Alfetta GT, DOHC 2 liter, fuel injection, 5-spd., low mileage, new upholstery, \$3150. Jones, 255-4539.

'81 YAMAHA Maxim, 4-cyl., 650cc, shaft drive, full fairing, Bates trunk, cruise control, \$1500 OBO. Kubiak, 265-6525.

'78 VW pop-up deluxe camper, stove, refrig., air, radials. Caldwell, 14100 La Cueva NE, 299-6480.

'82 MAZDA RX7-GS, 5-spd., AC, AM/FM stereo, sunroof, alum. wheels, 33K miles, \$8500 OBO. Chao, 292-0163.

SCHWINN mountain bike, cost \$350, sell \$250; Redline BMX, top line accessories, \$200. Campbell, 294-6000.

BALLOON, Piccard Stretch 6, less than 100 hrs., multicolor, new annual upon sale, \$3K firm. Kmatz, 299-5978.

'67 SAAB Sonet, 2 stroke #256, restorable, not running, one of 35 imported, many extra parts. Caton, 293-9584.

'73 CHEVELLE Malibu, 69K miles, 4-dr., AT, AC, power, 350-V8, \$1100 or trade for video equipment. Roeschke, 298-0365.

'70 FIREBIRD, mag wheels, AM/FM stereo cassette, \$1695. Thompson, 298-0946.

'67 CHEVROLET pickup, step-side short bed, 250 straight six, radials, \$1000. Kerschen, 292-8001.

'82 SUZUKI GS1100E, red, 4K miles. Gunclek, 255-4325.

'73 DODGE ¾-T 4x4, 360 V8, AT, PS, PB, AC, 69K+ miles, new tires & brakes, have shell. Randall, 821-0388.

NEW Yamaha, "Big Wheel," 200cc, motorcycle, \$1000. Pierce, 265-1817.

'57 CHEVY, 4-dr., stn. wgn., 6-cyl., AT, appraisal \$3578. Pierce, 299-2801.

'75 DODGE Colt stn. wgn., SB radials, \$950. Riggan, 268-1916.

'83 BUICK Skyhawk, 2-dr., low miles, AC, AM/FM cass., \$6500 OBO. Blair, 294-0824.

'74 BUICK Century 4-dr., 71K miles, \$1350. Guilford, 255-6294.

'85 F-150 4x4 pickup, PB, PS, 4-spd., AM/FM cass., many extras. Shaw, 299-8524.

'74 HONDA Trail 90, 3600 miles, bumper carrier, first \$400 takes it. Ford, 294-6133 after 5.

'77 AMC Hornet, 77K miles, 2-dr., V6, AT, AC, PS, PB, AM/FM, \$1400 OBO. Brady, 277-3475.

REAL ESTATE

TOWNHOUSE, 2-bdr., 1½ bath, jacuzzi tub, 1 yr. old, \$2K down & assume or refinance \$69K. Gronewald, 242-6072.

100'x150' lot in Wells Sandia Manor, near Central & Tramway, \$30K cash. Ward, 296-2207.

NE Heights, 3-bdr., 1 bath, forced air heat, single garage, oversized lot, near Constitution & Eubank. Lewis, 298-2877.

3-BDR., 1¾ baths, LR, DR, kitchen, den w/fp, study, garage & sundeck, assume 9½% loan. Carson, 293-7162.

SMALL MH, 2 mins. from base, 2-bdr., furnished (except 1 bdr.), \$5K cash. Nielson, 294-1281.

CONDOMINIUM, ¼ ownership, fully furnished in Silver Creek, Colo., ski resort inn, sleeps 6, 2 jacuzzis, \$36K. Clement, 299-2324.

ASSUMABLE loan, Wood Bros. San Carlos, tri-level w/3-bdr., 2 bath, in NE hts. near school, \$95,500. Whitehurst, 299-0153.

NE hts., 2100 sq. ft., Rutledge, 4-bdr., 1¾ baths, fp, den, auto. sprinklers, landscaped, many extras. Tilgner, 294-6464.

7.35 ACRES, Ojo Caliente, will accept tractor, implements as equity to assume \$27,500, 30-yr., 10% note, \$250/mo. Conklin, 821-6181.

CUSTOM tri-level, 4-bdr., 2½ baths, formal DR, den, 2500 sq. ft., side access, Kachina Hills NE. Smith, 298-8227.

½ ACRE, Los Lunas, custom home area, suitable for solar, view. Cook, 869-6921.

'80 LANCER MH, 2-bdr., appliances, set up on SW ¼ acre lot, \$17,500. Davis, 877-4677.

ONE ACRE lot, Crested Butte, Colo., near ski area, golf course, fishing area, stream frontage. Carli, 298-9271.

3-BDR., 1¾ bath, 24x14 den w/custom wet bar, city views, in 50s, consider all offers. Anaya, 831-0302.

WANTED

CHILDREN'S shoe-type roller skates, size 1 or 2. Mehlhorn, 294-5685.

CAMPER JACKS for 1500-lb. camper, Hines, 869-3839.

AIRLINE carrier for large dog, rent or buy, Langkopf, 293-4076.

CEMENT work, need driveway poured, approx. 10'x16'. Breckenridge, 291-0039.

FEMALE Persian kitten Tomek-Martinez, 292-3041 after 5:30.

SMALL apt. size refrig., small gateleg table. Shelton, 843-7501.

TRANSPORTATION for about a half pickup load of furniture to Madison, Wis., anytime, will consider any method, route, will pay fair price. Strip, 255-7230, 292-9470.

COUCH needs reasonable ride to Tucson, anytime soon. Sorrell, 292-0874.

METAL bird cage for Parakeet, stand preferred. Esterly, 296-9759.

IBM PC or equivalent, 256K minimum, two disk drives, monitor, graphics board optional. Key, 291-0464.

SHARE-A-RIDE

NEED ride to UNM arriving before 5 p.m. on Mon., Wed., will pay for gas. Hanson, 296-7141.

LOST & FOUND

LOST: 7/24 — ruby ring encircled w/cut diamonds, set in yellow gold, at C-Club pool/patio area, \$100 reward. Lanes, 298-6298.

Swim Season Ends Monday With Party

TONIGHT is a biggie in the ballroom. Don Lesman's big band, playing the tunes and rhythms of the big band swing era, returns to the Club tonight for another sell-out celebration. In the dining room, Chef Henry offers a couple of two-for-one specials — either prime rib or poached halibut, two dinners for \$12.95. Call the Club office, 265-6791, *right now* to find out about reservations.

THE ANNUAL end-of-season swim party starts on Labor Day Monday at 11 a.m. It's the standard all-out Coronado club outdoor celebration with fun and games for kids and adults scheduled throughout the day, ending with a balloon toss about 5 p.m. A luncheon buffet will be spread featuring all kinds of good things including barbecued beef or chicken for \$3.75. Fifty-cent beer will be available along with special prices at the portable bar. Dunn's Dancing Machine will make the live-it-up music.

NEXT FRIDAY, Sept. 6, sees the Isleta Poor Boys on the bandstand again playing their brand of popular country western music. The dining room offers filet mignon or fried shrimp, two dinners for \$12.95

VARIETY NIGHT on Saturday, Sept. 7, has a live magic show and a Walt Disney film scheduled. Brian Flora, magician and maker of strange and wonderful balloon animals, does his thing at 5:30; the movie starts at 6. Food service, tailored for families, begins at 4:30. There is no admission charge for members.

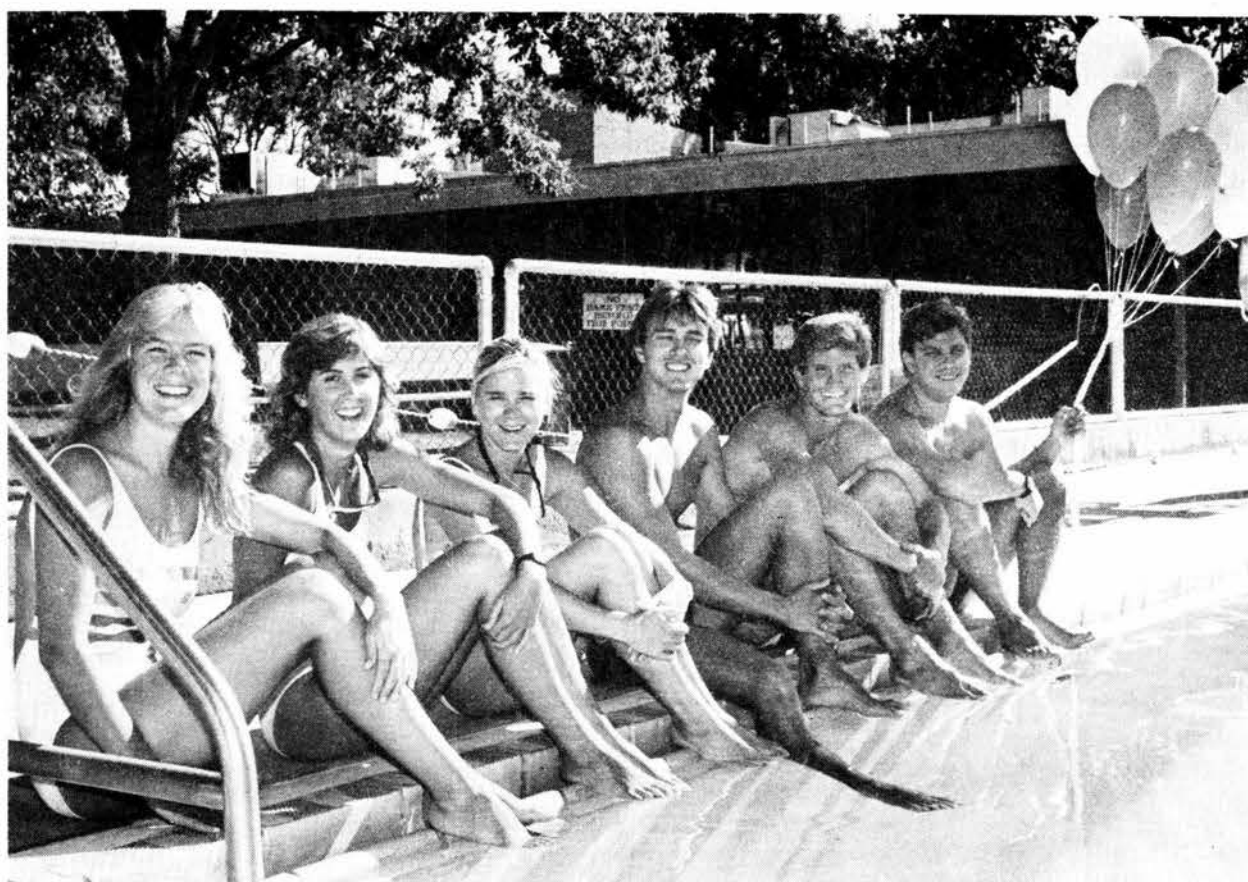
ANNUAL MEETING of the Coronado Club membership is set for Monday, Sept. 9, at 5:15. Seven vacancies on the board of directors will be filled through membership election. The nominating committee announces the following candidates:

Ken Sorenson (6322), Louise Loudon (131), Alice Maese (121), Bob Schemedeman (ret.), Mark Kiefer (1265), Jim McDowell (5127), and Phyllis Padilla (3521). Also, current board members John Otts (6222), and Marv Plugge (5171) seek reelection.

Candidates may also be nominated from the floor. For members who can't stay for the election, ballots will be available for early voting at 4:30. Following the business meeting, free beer and munchies will be served.

THE SINGLES MINGLE at the Coronado Club gathers more and more momentum as the word spreads: The Coronado Club is where it's happening. The next singles event is scheduled right after work on Thursday, Sept. 12, with Dunn's Dancing Machine, a free spread of goodies, and 50-cent beer and margaritas.

THE ANNUAL SKI FAIR sponsored by the Coronado Ski Club is set for Tuesday, Sept. 17, starting at 5 p.m. in the pool and



CORONADO CLUB LIFEGUARDS invite everyone to join them Labor Day Monday to celebrate the end of swim season. Fun and games for kids and adults are planned from 11 a.m. to 6 p.m. in the Club's pool and patio area. A luncheon buffet will be spread with all kinds of goodies. Special prices will prevail. From left are Carol Plugge, Tanya Payne, Robin Coats, Tim Snyder, Steve Petruno, and Jeremy Ham, all returning to school next month.

patio area. Local ski equipment vendors will have displays while regional ski area reps will promote their areas. Everyone is invited, but only Ski Club members are eligible for the fabulous door prizes that will be given away. If you want to join the Coronado Ski Club, enjoy the Club's special discount rates, participate in great ski excursions and other activities, now would be a good time. See you at the Fair.

A BON VOYAGE PARTY honoring those Sandians hitting the retirement trail next month is scheduled Sunday, Sept. 29. This will be a fine party for those retiring and for those who wish them well. A super buffet will be spread, Don Lesman's big band will play for dancing, and Happy Hour prices will be in effect all evening. Cocktail hour starts at 5, dinner at 6, and music at 7. Cost is \$5.75 per person. The Club's office staff will make special seating arrangements available and reserve any size table. Call 265-6791 soon to make arrangements.

CHRISTMAS IN AUGUST? The Club office has issued a call to Sandia and DOE organizations planning Christmas parties to make reservations now. After Sept. 9, holiday reservations for the Club's facilities can be made for private parties.

THE THUNDERBIRDS retiree group has scheduled a general meeting of the membership to elect officers and conduct annual business on Wednesday Sept. 11, at 2 p.m. in the ballroom. Refreshments will be served and door prizes will be given away.

TRAVEL DIRECTOR Marv Plugge (5171) announces two new Club-sponsored trips. A Dallas "Adventure" by charter bus, set for Nov. 27-Dec. 1, includes the Cowboys-Cardinals football game, a tour of Six Flags, Kennedy Memorial, Fairgrounds, and museums. Thanksgiving dinner atop the 70 story Hyatt-Regency Tower

is part of the package. Cost is \$248 per person, double occupancy.

Mazatlan on the Pacific coast of Mexico is the destination Nov. 12-19 for seven days on the beach with lodging in the luxurious Playa Mazatlan (also known as the Coronado Club South). Airfare, lodging, transfers, tips, a Fiesta night, and a cocktail party are part of the package. Cost is \$439. Tour guide is Chet Fornero (ret.), Trans-Globe Travel.

Other club-sponsored travel packages in coming months include a charter bus trip to Havasu City-Laughlin, Nev., Oct. 12-15. The tour will join Havasu City's Anniversary Days celebration and dance under London Bridge. The package includes a three-and-a-half hour waterjet boat trip from Havasu to Laughlin where lodging at the new Sam's Town Casino is part of the package. Refreshments on the bus are also included. Cost is \$160 double occupancy.

A few seats remain on the Cumbres-Toltec railway excursion Sept. 28. This one goes all the way across from Antonito to Chama through some of the most spectacular scenery in North America. (Most tours stop and turn around at mid-point.) Snacks and refreshments are part of the package. Cost is \$45 for adults, \$33 for children 12 and under.

Another family outing offered is a weekend bus trip to Canyon De Chelly on Oct. 26-27. The package includes a continental breakfast, refreshments, a picnic lunch, a jeep tour of the canyon floor, and lodging at Thunderbird Lodge. Price is \$90 double occupancy.

A travel package to the North Shore of Lake Superior and Canadian boundary waters is offered Oct. 4-13. An exceptional bargain at \$690, the package includes airfare, charter bus, nine night's lodging, and sightseeing.

The Club office has details and handles sign-ups.